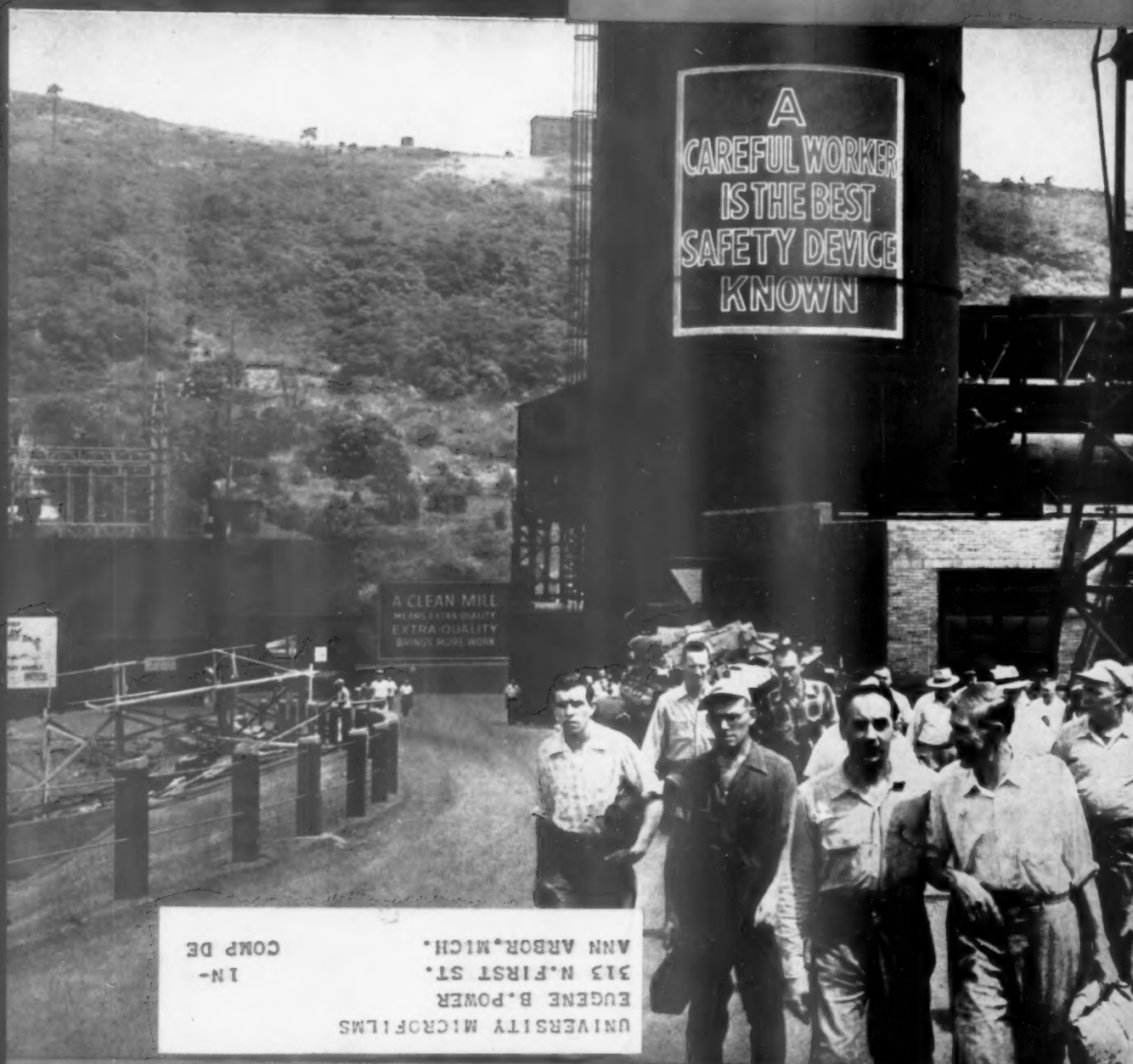


National **SAFETY NEWS**

MAY 1936

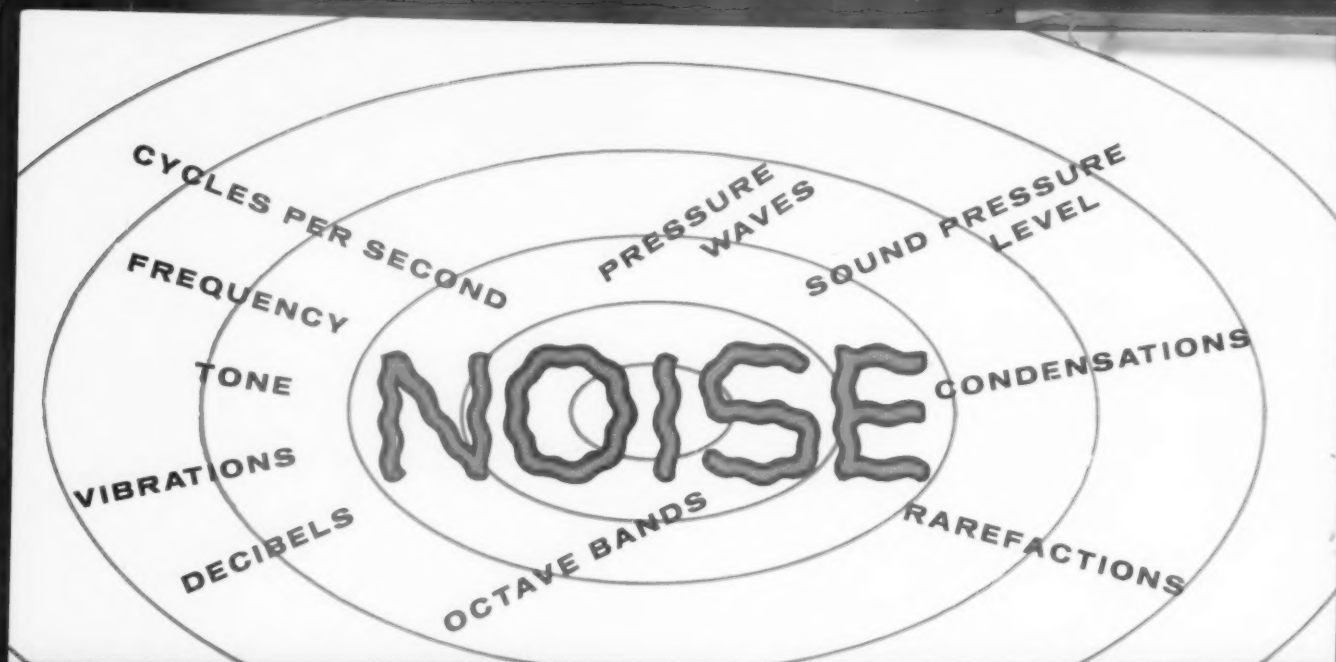
This issue contains a special
Technical Feature Section

The Journal
of the AMERICAN SOCIETY
OF SAFETY ENGINEERS



COMP DE
IN-

UNIVERSITY MICROFILMS
EUGENE B. POWER
313 N. FIRST ST.
ANN ARBOR, MICH.



Let's unscramble the NOISE vocabulary!

The language of noise is introducing many words and phrases that are unfamiliar and confusing. This basic "dictionary" may help clarify some of this new vocabulary.

Let's start with . . .

SOUND—The source of sound is usually a vibrating object. When the object vibrates, it sets up pressure waves (also called condensations and rarefactions) in the air. These waves reach our ears and we hear sound. Generally, regular or uniform waves produce pleasant sound. Irregular or non-uniform waves create unpleasant sound. And this brings us to a practical definition of . . .

NOISE—Unpleasant or unwanted sound caused by unrelated or random sound waves. These sound waves have two main properties that distinguish one noise from another. These properties are frequency and sound pressure level. First let's look at . . .

FREQUENCY—Often called tone, frequency is simply the number of times per second that sound vibrations reach the ears. Frequency is expressed in cycles per second. The low note on a piano key-

board, for example, sends out vibrations on a sound wave frequency of 27.5 cycles per second. The hearing range of the human ear is from 15 to 15,000 cycles per second. The other factor in sound measurement is . . .

SOUND PRESSURE LEVEL—This is a term used to express the difference between the least sound that can be heard by a normal ear (reference pressure) and any other sound. To the layman hearing a sound of a constant frequency, the sound pressure level of that frequency would be what he would call loudness. The technician, however, considers loudness a function of both sound pressure level and frequency. The unit of measure used to express the sound pressure level is the . . .

DECIBEL—An example can best explain this term. If a sound pressure level reading was taken in an average living room, the instrument would indicate about 40 decibels. A reading at a station while a train was passing through would indicate a sound pressure level of about 100 decibels. The decibel, therefore, is a measure used to show by what propor-

tion one sound pressure level is greater or less than another. A word of caution: the direct proportion *does not* identify sound energy. In our example, while the one decibel value is $2\frac{1}{2}$ times the other, the train noise is actually 1,000,000 times as great in sound energy as the noise in the living room.

OCTAVE BANDS—This term is often used in noise survey work. Octave bands are arbitrary spreads of frequencies (cycles per second). Octave bands are selected so the lowest frequency within a band is half the highest . . . 75-150 band, 150-300 band, for example. These octave bands are distributed throughout the entire noise range from 15 cycles per second to 15,000. It is common practice in survey work to measure the over-all sound pressure level and the sound pressure level in each of several octave bands.

There are, of course, many other terms and phrases used in the discussion of noise control and measurement. Much of this information is published in our booklet, *Noise—Questions and Answers*. If you are concerned or confused, you will find it profitable reading. Send for a copy.



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National SAFETY NEWS

Published monthly by National Safety Council

Containing a special Technical Feature Section

The Journal of the

AMERICAN SOCIETY OF SAFETY ENGINEERS

Vol. 73, No. 5

MAY, 1956

THE COVER: Another safe day at Weirton Steel Company. Who knows how much these conspicuous reminders have helped? (Photo courtesy Weirton Steel Employees Bulletin)

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Statements and opinions advanced in signed articles are personal expres-
sions of the authors, not necessarily those of the National Safety Council.

36,000 copies of this issue were printed

NATIONAL SAFETY NEWS is published
monthly by National Safety Council.
Copyright 1956 by National Safety Coun-
cil. Printed in U.S.A. Entered as sec-
ond class matter June 21, 1921, at the
Post Office at Chicago, Illinois, under the
act of March 3, 1879. Subscription rate:

to members, \$5.50 per year, single
copies 55 cents; to non-members, \$7.50
per year, single copies, 75 cents. Quan-
tity prices for yearly subscriptions and
single issue on request. Member Audit
Bureau of Circulation: Indexed in In-
dustrial Arts Index.

A Menace and a Challenge

The rising toll of accidents presents one of the most serious problems facing the people of the United States today. This 10-point Traffic Program of the National Safety Council for 1956 outlines a course of action—one that can succeed only through the united efforts of all citizens

DURING 1955, traffic accidents killed 38,300 persons and injured nearly 1½ million more, an 8 per cent increase over 1954. The mileage rate, held at the 1954 figure of 6.4 deaths per 100 million vehicle miles.

At this rate, within ten years traffic deaths will reach 53,000 annually, according to current estimates of traffic volume. Even to hold the death toll at the present level, the mileage rate must be drastically reduced. The records of several states and cities show that this and more can be done.

In addition, the same factors which result in accidents also cause congestion and limit the economic and social usefulness of highway transportation.

Objective

The National Safety Council traffic program will be directed toward achieving in all areas, and at all levels, official activity and citizen cooperation which will result in the safe operation of safe vehicles by responsible and competent drivers on streets and highways engineered for safety. To this end the Council has endorsed and supports the Action Program of the White House Conferences, as well as such additional constructive programs as may prove necessary.

Specifically, the Council's objectives through its own actions and through support of official actions are as follows:

1. Convince the public that the only real answer to the traffic problem is for every individual not only to drive and walk safely himself, but also to join actively in organized community, state, and national safety efforts.
2. Provide the facts, primarily through the Annual Inventory of Traffic Safety Activities, by which every community may compare its own traffic safety program and results with those of its neighbors and with recognized national standards.
3. Build additional, and improve existing highways until the total system is adequate for present and future travel—all with safety built in through use of modern, effective highway and traffic engineering techniques.
4. Adopt adequate, up-to-date and uniform state traffic laws and local ordinances.
5. Supervise the movement of traffic by adequate, trained enforcement personnel who are willing and able to create the necessary deterrent effect on the careless or willful violator.
6. Bring traffic offenders before courts which dispense

justice with dignity and understanding and thus encourage good traffic habits and attitudes.

7. Issue drivers' licenses to qualified applicants only, and by the firm use of power to suspend or revoke, make the privilege of driving on the public highway something to be cherished and preserved.

8. Teach safety to every elementary school child and provide driver education for every high school student.

9. Carry on a continuous educational campaign to inform and motivate adult drivers and walkers.

10. Make the automobile as safe as possible in terms of both accident and injury prevention, through better design and better maintenance.

The Council's Role

Most of the objectives listed above are the responsibility of public officials. On these matters, the role of the National Safety Council is to advise, assist, and support. Council services to official agencies include technical information, publications, forums, training, inventorying and evaluating programs, keeping national records and other services.

The Council has primary responsibility in the important work of organizing state and local groups for safety. This work is performed principally through a trained field staff and also through publications, training, surveys and inventories, committees, etc. A focal point of this activity is the organizational effort sponsored by the President's Committee for Traffic Safety and its associated groups.

The Council, in addition, has by virtue of its Congressional Charter, an obligation to act as spokesman for the general public interest in all matters of safety, and thus must lead in setting a faster pace for strengthened safety activities of the nation.

Our Goal in 1956

While working toward all objectives outlined above, the Council's principal efforts in 1956 will be aimed at creating, strengthening and assisting traffic safety organizations in all states and communities. Since vigorous enforcement by police, courts and driver licensing can produce the quickest results, these organizations will be urged and helped to give particular attention to the strengthening of enforcement efforts to such extent and in such ways as shown necessary by the inventory of their present programs.

G. C. STEWART
Executive Vice-president

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Memorial Day

*On fame's eternal camping ground
Their silent tents are spread;
While glory guards with solemn round
The bivouac of the dead.*

THEODORE O'HARA

* * *

As we are united in life, and they united in death, let one monument perpetuate their deeds, and one people, forgetful of all asperities, forever hold in grateful remembrance all the glories of that terrible conflict which made all men free and retained every star on the Nation's flag.—*Inscription on the Kentucky memorial at Chickamauga.*

Gastronomic Perils

Not all the hazards of the highway are on wheels. Some of them lurk in places where neon signs announce "Good Food." I don't know of any words that are used more loosely.

"I've run more risk eating my way across country than in all my driving," says Duncan Hines who has braved bacteria in thousands of North American hash houses and listed some of the better ones in a compact little volume. Many tourists regard it as important as the road maps.

All over the country roadside joints are assaulting the public stomach with unappetizing, indigestible and often unsanitary messes. Mr. Hines' comments on some of them would burn the hamburger. His list is not infallible, of course, and even a good place can go into a slump, but Mr. Hines has undoubtedly reduced the consumption of bicarbonate.

The tired and hungry traveler in a strange town doesn't know one restaurant from another and he is likely to pick the wrong one. Chrome fixtures and fluorescent lights may front for a filthy kitchen.

I haven't forgotten the family's first motor vacation—back in 1936. It was positively amazing how many cooks could spoil food and these culinary crimes were not peculiar to any region. They were widely distributed through Indiana, Ohio, Pennsylvania, New York and Ontario. By the time we reached Cleveland soda mint tablets had become part of our rations.

Subsequent trips have been much more satisfactory from the standpoint of food. A tourist seems to acquire an instinct which helps him in avoiding the worst grease traps. Even more important, he develops a hard-boiled attitude and doesn't hesitate to walk out if rancid odors hit him in the nose or a swarm of flies obscures the view.

On a long trip, a good night's rest is as important as food. Every main highway is dotted with shining new motels, most of them clean and comfortable. But it pays to quit the road early enough to find a good place, particularly at the height of the vacation season.

And if your vacation time is no longer restricted by children in school, an off-season trip avoids heat and crowds.

In This Issue

The building was like a dry Christmas tree lighted by candles, just waiting for the right combination of circumstances to go up in flames. Sooner or later somebody does some small thing he isn't supposed to do and disaster follows. Our safety engineer's investigation revealed a series of human failures—including the company's tolerance of a glaring firetrap. (Page 14)

* * *

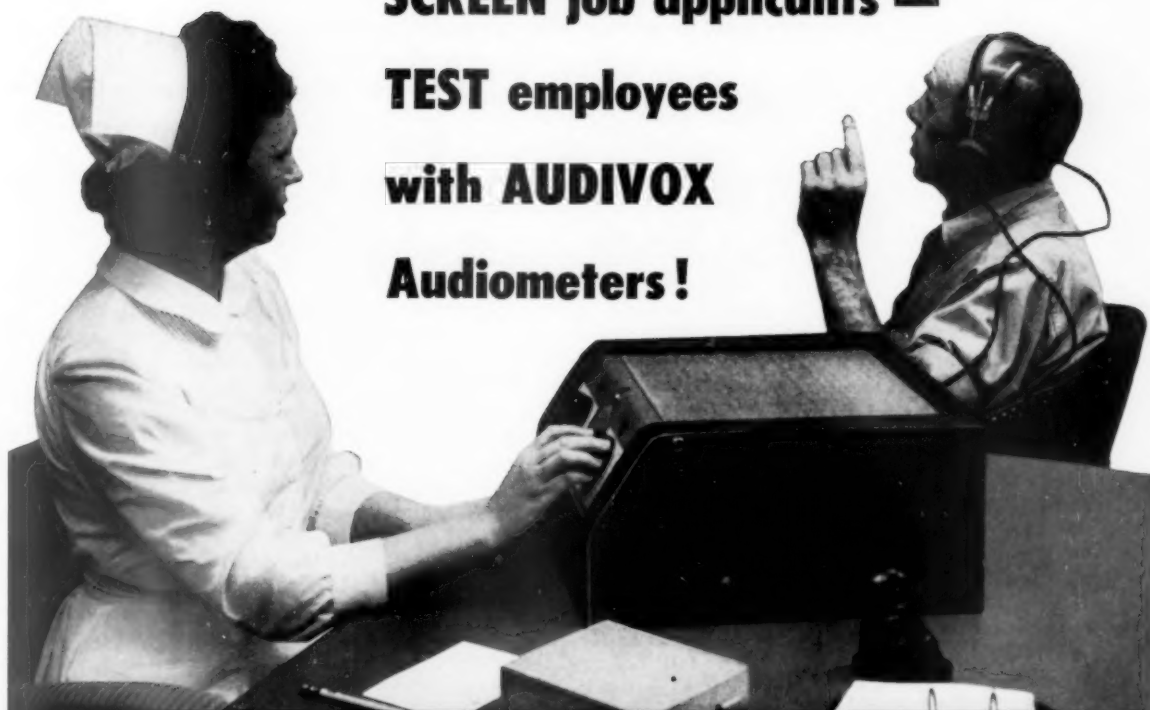
America's rivers have made history and figured prominently in the country's commercial development. The picturesque old stern wheelers have practically disappeared from the scene. In their place are trim, powerful diesels, designed for greater safety and comfort for the crews. The need, as in many other industries, is for more trained men. (Page 18)

* * *

International air transport has done more than shrink the world; it has created a shining record of man's capacity to cooperate with man. Pilots, mechanics, engineers and weathermen of all races and creeds have proved that dedication to the safety of others is the one infallible way to assure our own safety. No less significant are the overtones of human brotherhood produced through world-wide cooperation. This article appeared originally in *Flying* and since has been circulated in many countries. The editors are happy to present it to readers as a tribute to the men who are making flying safe and as a fine interpretation of world-wide good will. (Page 20)

Carman Fish

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ACCIDENT POST-MORTEM

What caused that accident? What would have prevented it?

A review of cases by Franklin G. Pater

Industrial Department, NSC

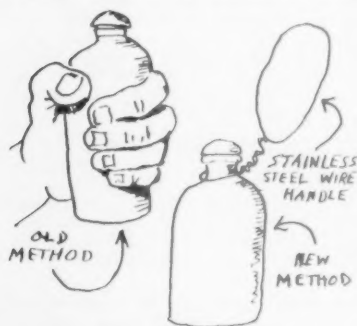
WE NEED your help. Our file of accident cases is limited. You can help us by sending details of accidents that have occurred in your organization. Descriptions should include:

1. Complete description of accident.
2. All circumstances—mechanical and environmental—surrounding the accident.
3. Photos and/or drawings, if available.
4. Findings of the investigation.
5. Conclusions.
6. Action taken.

Handling Corrosive Samples

An analyst was collecting the composite sample of nitric acid in a polyethylene bottle. He was wearing goggles and rubber gloves, but the bottle was wet and spilled from his hand. Strong acid splashed on this employee's face and ear, causing first and second degree burns. The fact that he was wearing approved goggles prevented injury to his eyes.

Cause: The moisture on the bottle (caused by splash of acid



while it was being collected) and the rubber gloves, which were a necessity, made a positive grip hard to secure.

Cure: A length of stainless steel wire was wound securely around the neck of the bottle and a loop

for lifting the bottle from the sampling position was attached. (Note: This should apply at several locations.)

Loose Clothing, Unguarded Shaft Cause Fatal Accident

Since there were no witnesses, the analysis of this accident is conjecture. The victim was standing on a step ladder while working in a space about 3½ ft. wide above a revolving shaft.

It was deduced that the man either missed his step descending from the step ladder or lost his balance as he stepped on the floor and fell against the revolving shaft. He probably backed into and fell against the shaft, catching his clothing, and was twirled around the shaft.

Comment. The investigation did not come up with any conclusions. It was stated, however, that the company had been trying for some time to eliminate this lineshaft.

The man should have turned off the power before working in the area. Another thought is that the lineshaft might have been guarded. It is hard to believe that this accident could be blamed on an unsafe act on the part of the employee since the hazard was well known before he went into the area.

Sharp Corners Cut Cable, Knock Man 32 Feet

An employee was directing the hoisting of a new crane truck wheel to the crane runway. A ¾-in. steel cable sling was wrapped twice around a steel angle part of the building box girder above the runway. A 1¼-in. hemp rope was tied to the wheel at the floor level, then run through a snatch block and attached to an adjacent crane

which provided the hoisting energy.

A ¼-in. hand line was attached to the wheel and manned by two workmen on the floor. The man directing operations assumed a crouching position on the runway with his head extended to watch the wheel while directing the movement of the pulling crane.

As the wheel reached the level of the bottom of the crane runway, the cable sling broke and the load fell to the floor. The employee directing operations from the runway was struck on the back of the head by the hoisting rope as it snapped to a vertical position. It knocked him to the floor, 32 feet below.

Investigation revealed that the ¾-in. cable sling had been wrapped tightly around the steel crane-way member with no provision to protect it from the sharp edges of the girder.

The investigating committee suggested that cable slings be removed after use, that particular care be given to the selection of the building member being used to support the snatch block, and that provisions be made to avoid cutting the cable on the edges of members being used.

Comment. The description of the accident and the equipment is not clear. However, the description poses several questions. First, the cable should have been padded where it was wrapped around sharp corners. This would have prevented the excessive strain on the corners.

A second question arises as to how the cable was fastened. Was it secured with a knot or with wire rope clips? If a knot was used the strength of the cable would have been reduced by one-

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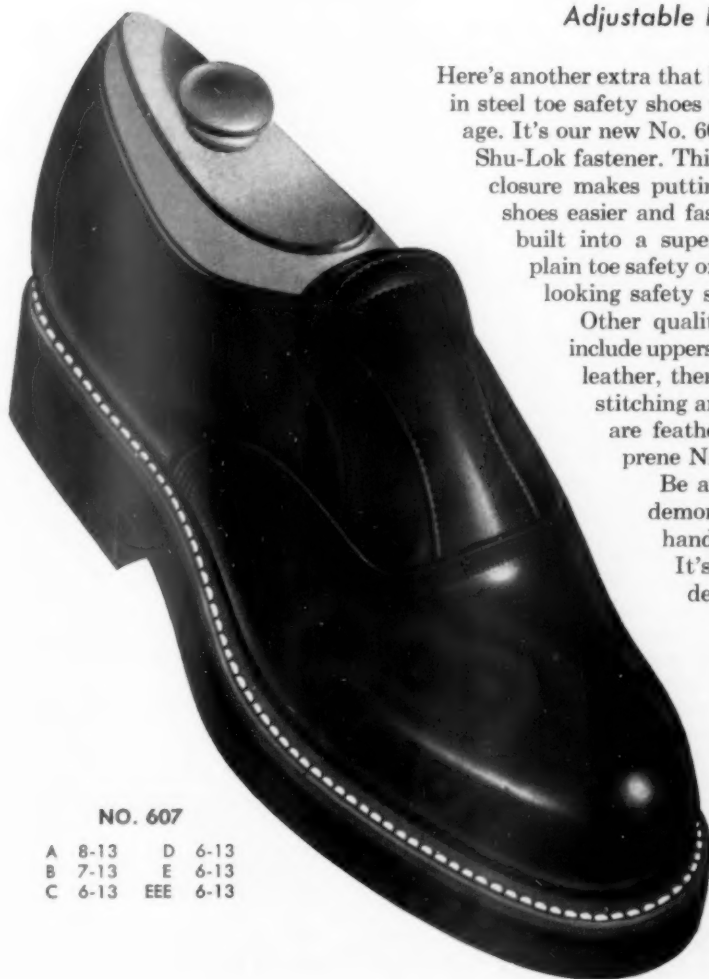
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CONSULTATION CORNER

By George MacDonald, Industrial Department, NSC

Got a problem in accident prevention or occupational hygiene? Questions are answered by mail, a few of general interest being selected for publication here

Sawdust Causes Slipping Hazard

Question. We have used the so-called anti-slip metal dock boards or bridges between our docks and freight cars for several years. Our experience is very bad as we continue to have slips and falls on this equipment.

Investigation shows that sawdust from our floors and packings are picked up on the bottom of the shoes of our freight handlers and deposited or scraped off on the metal dock boards.

This wet sawdust accumulates and packs solid between the raised anti-slip portions of the dock board. Men pushing hand trucks across find that when they step upon this sawdust with pressure it gives way, causing a slip or a fall. What can we do to correct the situation?

Answer. Examine the surfaces of dock boards carefully. It is possible that several years of use, with foot traffic, hand trucks (especially those with steel wheels), pulling crates across them, plus materials picked up on the shoes of the workers, have caused the raised anti-slip surfaces to become worn smooth.

Not having the details of your operations, we don't know where your sawdust originates. It appears that you have a housekeeping problem or the need for a methods change, or both.

An attempt should be made to keep the sawdust off the floor or to control the amount that might collect. This will reduce the tracking by freight handlers.

If woodworking machines are used, sawdust collecting systems should be used. Individual units can be attached to each machine or a central collecting system can be installed to service many.

Should the job be an occasional one, the workers should be instructed to clean and sweep up after each operation.

Review your method of operation. Perhaps relocating this job will take it out of the area of the freight handling traffic.

Should the sawdust be a part of packing, inspection should be made to see if the crating is poor, causing leakage. Perhaps the crating is good but there is a problem of poor handling with units being dropped, thrown, or improperly piled, causing them to open and spill sawdust.

Getting back to the dock boards, I would recommend that you consider anti-slip open grating. The foot collection will scrape off and drop through. This type of grating is used extensively for outdoor catwalks in industry.

When purchasing these dock boards, request raised sides and stress anti-slip qualities needed.

Some companies request, or have welded later, two metal strips across the open work so that the steel truck wheels will run on them. This prevents vibration from the opening and excessive wear of the abrasive surface. These wheel strips should be separate so that there is an open grate space between for the worker to walk upon while pushing the load. For air filled or hard rubber tires, open grating is no problem.

Deep Snow Hides Outdoor Hydrants

Question. Our plant is located in an area where heavy snowfalls many times completely cover our outdoor fire hydrants. The maintenance crews shovel around these hydrants eventually, but we are concerned with quick identification in case of a delay in snow

clearance. What can you suggest?

Answer. Many plants have had their maintenance department design and install equipment to protect outdoor fire hydrants and to provide quick identification. Here are a few ideas that have been sent to our staff engineers:

1. Where the fire hydrant is close to the building wall, a bright red spot is painted on the wall above the hydrant. If the hydrant is covered with snow or the view is blocked, the red painted area will identify its location.

2. Another method is to install a post, painted a bright red color, at the hydrant location. This post should have its height determined by local conditions surrounding. Consideration should be given to materials piled in the yard area, etc., that might block the view.

3. Some companies construct a large lightweight wooden box, paint it bright red and then set it over the hydrant to protect it from being buried in snow. The height of the box is determined by snowfall experience.

4. One company had an excellent idea in designing large, loose canvas bags of bright red awning material. These covers are placed over the hydrant during the winter months and the bright red color stands out against the white snow. The advantage of this method is that there is no storage problem during the summer months as these bags can be folded flat and stored on a storeroom shelf. The maintenance cost is low, as they can be repainted with canvas paint every few years.

A National Safety Council Data Sheet is available showing the use of flexible electric heating cable that can be used where there is a freezing problem.

Hydraulic Systems Need Special Attention

Question. What can we do about accident and fire hazards in connection with high-pressure oil hydraulic systems on bottle machines in our glass manufacturing plant?

Answer. General Motors Corporation has available a booklet, "J.I.C. Electrical, Hydraulic, and Pneumatic Standards for Industrial Equipment," which lists minimum wall thicknesses for steel tubing for high pressure and specifies welded flange fittings or approved equal for high-pressure tubing above 1-in. diameter.

Cases have been reported to the National Safety Council where threaded fittings have sheared off

—To page 137

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Both MAGIC Cleaning Stations are scientifically designed for economy-efficiency in your Eye Protection Program. Each Station gives more safety for less money.

MAGIC Lens Tissue (silicone treated) sheet is over 50% larger than usual, and has twice the tearing strength. Yet it costs less. Loaded with sparkle-power, it polishes—and protects lens—as it cleans crystal-clear. Compact, self-mounting MAGIC Lens Tissue Dispenser needs no screws, no drilling. Just stick it to the wall.

MAGIC Heavy-Duty Cleaning Station is for dirty, oily areas or where Anti-Fog protection is needed—on plastics or any eyewear. MAGIC Lens Cleaning and Anti-Fogging Fluid is pressure-packed. 1,400 applications per can. One MAGIC can equals 4 old-fashioned bottles. That is the first saving. No pump. No bottles to refill. Indestructible steel Dispenser locks can in place. Releases sheets 1-by-1, not in bunches, greatly reducing waste. HEAVY-DUTY Paper, not Silicone-treated, is a superb, super-strong, wet-strength tissue. No scratching on plastic, and no lint.

Magic Lens Tissue.....	\$ 8.40 per carton
(6 refills per carton)	
Magic Lens Tissue Dispenser.....	\$ 2.50 each
Magic Heavy-Duty Dispenser.....	\$ 5.95 each
Cleaning & Anti-Fogging Fluid.....	\$12.50 per carton
(Twelve 12-oz. cans)	
Heavy-Duty Paper.....	\$11.60 per carton
(18 giant refills (760) sheets ea.) All prices F.O.B. Shipping point	

Exchange all your other Stations for Magic FREE

The Silicone Paper Company of America Inc.
75 East 45th Street, New York 17, N. Y.



Magic Lens Tissue, America's
leading Eye-aid for Safety.



Magic Heavy-Duty Clean-
ing Station, Science's answer
to Grit, Fog and Grime.

Magic Pop-Up Pack



In self-dis-
pensing box
for your desk
or any place
in the office, plant or labora-
tory. \$11.95 per Carton of
12 Boxes.

WIRE FROM WASHINGTON



By Harry N. Rosenfield
Washington Counsel, National Safety Council

CONGRESSIONAL INTEREST in matters of safety is increasing on a number of important fronts, as the Congress starts on the last half of its current session.

Industrial Safety. Water pollution has been much discussed in the Congress, especially because the existing Water Pollution Control Act expires June 30, 1956. The President has asked for the extension and strengthening of that law. S. 890 was passed by the Senate last year, in the first session of the Congress, but was not approved by the House (See "Wire," August 1955). Hearings on a new version of that Senate bill, H. R. 9540, have been held in the House this session.

The Atomic Energy Commission has appointed a special aide to assume important administrative and technical responsibilities in the AEC's reactor safety program. He will assist in developing criteria and standards for safe design and operation of nuclear facilities, and in the safety evaluation of proposed facilities.

The AEC also made public a progress report by a special group of 10 insurance executives who are studying problems involved in insuring private operation of nuclear facilities.

Two different Federal agencies have issued regulations or proposed rule-making provisions concerning the transportation of explosives or dangerous articles, the ICC, and the Coast Guard.

Statistics. The Senate has passed an Administration bill, which has bipartisan support, for the collection of accident statistics, among others. S. 3076, the National Morbidity Survey Act, would authorize the Public Health Service to conduct a continuing survey and special studies of sick-

ness and disability in the United States.

The Senate Committee on Labor and Public Welfare, which recommended Senate approval, said in its report: "Better statistics on the frequency of various types of non-fatal accidents will greatly assist the public and private safety programs which seek to reduce accidental injury in the home, on the highway, and in industry." The method of operation under this bill would be through continuous interviewing of representative samples of the households of the country.

Aviation Safety. The Federal Communications Commission has issued a formal rule-making notice requiring tall TV towers (those more than 500 feet above the ground) to use existing structures or groups of antenna facilities. "The principal objective," according to the FCC, is to assure that "the towers will not constitute a hazard to aviation." Two pending bills, H. J. Res. 138-139, which would limit TV antennas to 1,000 feet, have already been the subject of hearings.

The Civil Aeronautics Board has issued a notice of proposed rule making to revise the standards for the issuance of medical certificates to airmen.

Farm Safety. The President issued a proclamation designating the week beginning July 22, 1956 as Farm Safety Week.

Insurance. The Federal Trade Commission has issued a notice of public hearing for proposed Trade Practice Rules for the Accident and Health Insurance Industry. (See "Wire," April 1955). The purpose of such proposed rules is to eliminate and prevent harmful acts and practices in connection with the sale and offering

for sale of accident and health insurance.

Highways. A rising tempo of concern is still evident in Congress with the number of traffic accidents. The House of Representatives adopted H. Res. 357 which authorizes its Committee on Interstate and Foreign Commerce "to conduct a full and complete investigation and study of the large increase in traffic accidents on the streets and highways of the United States during recent years."

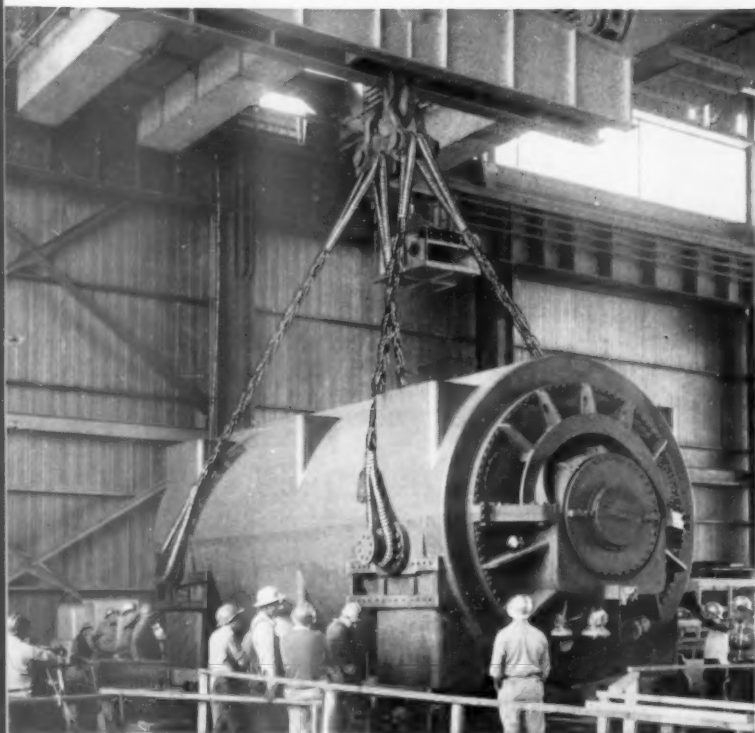
The scope of the investigation is to determine (1) the extent to which such accident increase is due to excessive speed, intoxication, lack of adequate safety inspection of vehicles, insufficiently strict state and local laws, and the poor condition of highways, and (2) the measures which may be taken by the Federal Government to assist in eliminating or reducing such accidents.

The explanation given to the House of Representatives before it approved the resolution was that its purpose was to "investigate the traffic situation." Discussion on the proposal, which was unanimously adopted, heard language such as the following: "There is no doubt in my mind about the compelling need for the Congress to take some steps in an effort to halt the alarming and appalling accident rate and death toll . . . which occurs on our nation's streets and highways."

The sponsor of the resolution, Congressman Roberts of Alabama, stated: "I do not believe that any member need fear this resolution will mean Federal interference or control . . . It is my personal intention that this legislation can be beneficial in helping states draft new, or revise their present, safety programs by discovering new in-

—To page 168

240-ton stator lift at Detroit Edison!



240-ton stator lift at River Rouge, Michigan, was accomplished with four 1 1/4" Macwhyte Type 1 8-part ATLAS Slings.

Loads like this are handled safely with ATLAS balanced braided slings!

Shown here are typical applications of Macwhyte ATLAS balanced braided slings used for handling generator station equipment.

The balanced ATLAS Sling results from Macwhyte's method of braiding right lay and left lay endless ropes. All ropes in the body react in the same manner when loaded and each rope carries an equal share of the load—this produces a lightweight, flexible, kink-resisting sling for safe and economical handling.

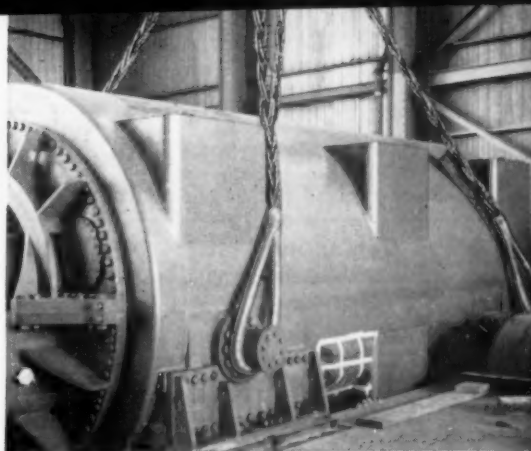
Special Sling Catalog lists a wide variety of sling types and sizes. If the sling you need is not listed, let us know—we'll design and make a sling that fits your needs exactly.

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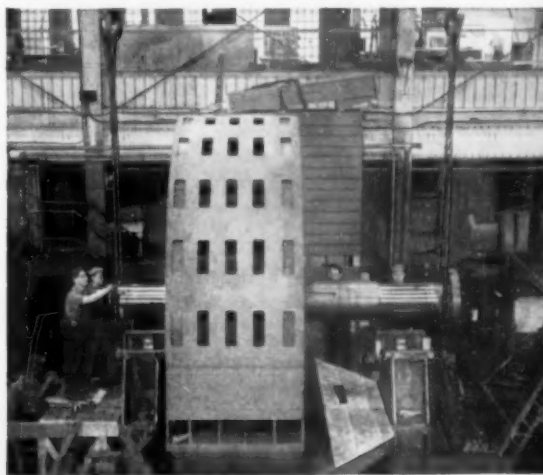
Distributors conveniently located throughout the United States.



ATLAS handling features mean safer lifting. Note how the flexible loop eye conforms to lifting trunnion.



ATLAS E-2 ASSEMBLY, 8-part Round-Braided Sling lifting a metering outfit. Approximate weight 1 ton.



ATLAS Type 1, 8-part Round-Braided Slings handling generator unit.

3189

SAFETY OFF THE JOB

Suggestions for company and community programs

By Gordon T. O'Neill

NSC Staff Representative, OTJ Safety Committee

Advice to Vacationers

At the International Harvester Co., Chicago, 10 days prior to the vacation shut-down, a wrecked vehicle was displayed in the plant area. This vehicle was obtained through the local Motor Club and the local Citizen Traffic Safety Board. In addition, vacation leaflets were distributed to all the employees along with their vacation pay to remind them to be careful at all times during the vacation period.

At the Illinois Bell Telephone Co., Chicago area plant, "Happy Vacation" cards were signed by supervisors and given to all plant employees as they left for their vacations. The cards depicted various vacation activities and also wished the employee a happy vacation and requested that they return safe and sound to the job.

At the Port of New York Authority, a special appeal was made to each family when employees left for vacation. A letter signed by the manager of the department and literature on vacation safety were distributed with vacation pay checks and reached every family.

At the E. I. du Pont de Nemours & Co., Inc., Finishes Plant, Sayreville, N. J., before each holiday the Safety Department delivers a safety talk on home and off-the-job accidents to employees at the plant's main entrance through a public address system. The talk is repeated enough times so that all employees are contacted. Du Pont feels that this has been more successful than any other activity.

Summer Play Program

The United States Vanadium Co., Bishop, Calif., gave the use of the recreational hall, ball field, and park and athletic equipment to the Round Valley Recreational Association for its organized play program during the summer months. Any child living in the

area was eligible to participate in the safe and supervised play program.

Movies for Children

The Electro Metallurgical Co. and Carbide Power Co., Sault Ste. Marie, Mich., sponsored a series of 13 weekly movie programs for employees' children. Each included a feature picture, a comedy and a health and safety short. Attendance was 1,353 for the series, which was shown at the plant recreational building by the company safety and first-aid men.

The plant also sponsored a Red Cross first-aid course for employees and the public. Twenty-three employees and 76 outsiders completed the advanced and standard Red Cross courses.

Monthly O-T-J Themes

The New York Telephone Co., New York, has developed a program around the theme, "Sharpen Your Safety Sense." The program is designed to correlate off and on-the-job safety. Monthly safety themes are discussed in the company publication, presented on company-developed posters, introduced to the employee's family by the use of literature developed by the company or from other sources, and discussed in the monthly safety meetings.



Three Contest Ideas

At the Linde Air Products Co., Division of Union Carbide and Carbon, New York, one plant conducted a safety slogan contest in which wives and relatives of employees were eligible to submit slogans. This contest was designed to determine the effectiveness of such contests in creating employee interest, and was found to be moderately successful.

In another location a contest was conducted based upon employees and members of their families being able to answer certain questions relative to safety information posted on the plant bulletin boards or given to the employees by their supervisors. This contest was found to be moderately successful.

A safety hint poster suggestion plan seemed to generate more enthusiasm and interest on the part of the employees than any other activity. In this particular plan, employees and their families submitted safety suggestions. Winning suggestions were printed on 8½ x 11 paper, along with pictures of the family submitting the hint demonstrating the suggestions. These bulletins were distributed to all employees.

Picture Puzzle Contest

The E. I. du Pont de Nemours & Co., Inc., Richmond, Va., plant conducted a safety picture puzzle contest which ran for three months and consisted of three puzzles—one each for home safety, traffic safety, and public safety. Prizes were given each month for the seven greatest number of unsafe conditions found in that month's puzzle. The puzzle on home safety included 51 different unsafe conditions. The individual accumulating the greatest score on all three puzzles was awarded a trip to the National Safety Congress in Chicago.

Home Safety Program

At the West Virginia Pulp and Paper Co., Luke, Md., a monthly safety pamphlet is mailed to the homes of citizens, to schools, and to business and professional leaders of the community, as well as to homes of employees. This publication is a digest of current news

—To page 176

best by test!

They're Back

**THE BEST KNOWN SOLES
AND HEELS IN THE WORLD!**

**NEO
CORD**

SOLES & HEELS

Now available in extra wide contours, the Neo-Cord sole and heel is ready to meet the roughest, toughest wear a workman can give them. Made of duPont Neoprene and cord, Neo-Cords have a high slip-resistant factor for the life of the sole, give a firm comfortable support to the foot and resist oil—heat—acids and caustics so detrimental to ordinary soling materials.

Start getting the extra quality—wear and safety of extra wide Neo-Cords, today—the workshoe sole that has been proved to be *best by test* in all walks of industry.

**resists oil — heat
acids — caustics**

"Sell 'em the Shoe with the sole for the job"

Gro-Cord offers the only complete line of industrial-workshoe soles that enable you to assure workmen of greater satisfaction through comfort—safety and longer wear, regardless of job conditions. Get acquainted with this outstanding line. Write for full information, today!



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(Fiction)

*The Diary
of a
Safety Engineer*

The old building had been operated as a calculated risk and, finally, a combination of negligences turned the risk into a smoking ruin

The 'Christmas Tree' Fire

By BILL ANDREWS

May 3, 1956

I GOT THE PHONE CALL at 1:15 a.m. I was in the plant by 1:45. I stayed on through the night of fire and smoke and stench.

The old building was a total loss, gutted, roofless. We lost a truck at the loading dock, burned up two box cars and some stacked lumber nearby. The roof of a nearby warehouse was burned and its contents suffered smoke and water damage. There was no other damage to either buildings or material.

The old watchman who turned in the alarm sprained his ankle getting out of the building. Otherwise, no injuries.

There is disruption, of course. The old building housed a collection of small units that to some degree affect the work of most of the plant.

This morning, the place was alive with various investigators from the fire department, the insurance company, and our own corporation insurance department. There were the usual hints of arson, negligence, delay in reporting, and so on.

I'm not too much interested in the findings of these outside investigators. I don't think there was arson. I've talked to the watchman, and I'm pretty sure he reported as soon as he knew there was fire, and there is no indication of slackness on his part in making his rounds. As to negli-

gence—of course there's negligence of a real, if not a legal type. There always is in a bad fire.

We operated the old building as a calculated risk—we all knew that. It was built in 1903, of brick and wood, with open stairwells. Its electrical system had been patched, overhauled, and altered times without number. I had pointed it out as a major fire hazard in my first survey of the plant and had succeeded in removing from it a painting operation and a small solvent storage. I've described in earlier issues our fairly successful effort to improve the housekeeping, mainly to cut down the fire risk.

Still and all, I knew that it was a fire just waiting to happen, and I was on record in writing repeatedly as recommending its demolition and replacement with a modern structure.

What remained to me this morning was, I felt, to determine three principal points:

1. The specific cause of the fire.
2. The reason for the failure of the sprinkler system to control the fire.
3. Recommendations in regard to two other old (though not quite so old) buildings in the plant complex.

We could narrow down the search on point No. 1, since no night shift worked in the burned building. Barring the possibility that someone had been sneaking

a smoke after hours in the building, it had to be either an incident during the day or during the cleanup in the early evening. Apparently the fire began in the basement, in or near a small print shop.

I checked with the print shop foreman and found that near the end of the day there had been a press breakdown. When the men went home, they left behind them a litter of tools, rags, machine parts, and several spoiled sheets of paper. There was also a small amount of gasoline which the repairmen had been using to clean greasy parts.

The sweepers claim they didn't do anything in that area, since clearly repair work was in progress, that they smelled no smoke, and did nothing to produce fire. But plant protection insists they have, on previous occasions, found evidence of smoking after hours in the building—cigarette butts in trash cans, etc.

As far as I'm concerned, it is pretty definitely established that the print shop crew left a perfect tinder pile, and that some sweeper flipped a cigarette butt into it during the evening.

Next, point No. 2, the sprinkler failure. Actually, the sprinklers did function—or some of them. But they didn't do so, according to the record of the automatic alarm, until after the fire gained

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WHAT'S SO GREAT ABOUT EYE SAVERS **SOFT VINYL FRAME** SAFETY GOGGLES?



If you checked all three, you scored 100%. If you need all three, you should check into Eye Savers **SOFT VINYL FRAME** safety goggles.

For details, see your Authorized Eye Savers Supplier or write direct



WATCHMCKET OPTICAL CO., INC.

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In Canada: Levitt-Safety Limited, Toronto 10, Montreal 26

National Safety News, May, 1956

15



H933

Brown Glove Plain Toe with Cush'n-Guard Flap, Anchor Flange Steel Box Toe, Leather Toe Liner, Brown Resist-Oil Cord Rope Design Sole and Heel.

INTRODUCING *Another* EXCLUSIVE
HY-TEST PLUS FEATURE...

HY-TEST

SAFETY SHOE

Cush'n-Guard
Reduces ^{INSTEP} *Injuries*

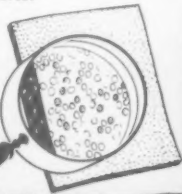


Cush'n-Guard flap is attached to shoe so that it permits freedom of movement of the foot. Total area of protection is approximately 10 square inches.



Tests of the special-design cellulose plastic shell demonstrate important properties of flexibility and resistance to force.

Ensolite A... 1/4" thick layer of shock-absorbing, cellular plastic material between shell and shoe affords further protection to instep.



Perfect for heavy industry... wherever instep injuries are prevalent... HY-TEST's new H933 is designed to afford protection to this vital area without hampering freedom of movement of the foot! The Cush'n-Guard flap is reinforced with a special-design plastic shell that is tough yet resilient. Between the plastic shell and the shoe is a 1/4" thick layer of shock-absorbing, cellular plastic Ensolite. This safety shoe, you'll agree, is the answer to a perplexing safety problem!

Free!

Complete details on HY-TEST's H933 and the World's Largest and Largest Selling Safety Shoe Line. Write today.



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National SAFETY NEWS

MAY 1956

More Than a Technician

OCCASIONALLY we hear complaints about the loose use of the term "engineering," particularly in connection with accident prevention.

Engineering has expanded far beyond its original meaning of managing engines. According to Webster, it now comprises "the art and science by which the properties of matter and the sources of power in nature are made useful to man in structures, machines, and manufactured products."

That definition still holds good in the atomic age.

Engineering originally was divided into two main branches—military and civil. The latter was a catch-all term for anything not classifiable as military. Now *civil* engineering applies principally to construction and public works. The subdivisions of non-military engineering under various names have expanded enormously.

Engineering is also applied to the techniques of organizing and conducting an industry (industrial engineering) or a business enterprise (administrative engineering). Thus there is a precedent for those who apply it to fields somewhat remote from physics and higher mathematics.

But regardless of the field or the problems involved, the engineering approach involves scientific methods. It means the collection of all possible facts to be used as a basis of procedure instead of relying on guesswork.

The title of engineer implies a background of technical knowledge, but an engineer is much more than a technician. Many of his important duties are administrative. He is not concerned with science for its own sake but in using scientific methods for getting the world's work done. He is constantly at work developing standards for materials and machines and studying their performance in actual use.

Safety engineering involves a thorough knowledge of industrial equipment and processes, the hazards involved, and the means of protection. In this respect, safety engineering does not differ materially from other branches of engineering. While all involve human factors, few are concerned with so many intangibles as is accident prevention. Because of these factors and because professional standards are not yet clear cut, many regard safety engineering as an inappropriate name for the profession.

Too many accident prevention programs fall short of maximum effectiveness because they are not backed by sound engineering practice. Since safeguarding alone has failed to bring the desired results, there has been a tendency to discount the importance of mechanical factors.

The engineer realizes that there are problems that cannot be solved with a slide rule. He understands the importance of the human element. But he knows, too, that accident prevention work based on admonitions alone, without regard for physical conditions, is operating on a very unsound basis.



TYPICAL of progress in river craft is the Federal Barge Lines towboat Lachlan Macleay. Improvement in working conditions and living quarters aboard have kept pace with increased power and efficiency.

A New Era on Inland Waterways

Trim diesels have replaced the old sternwheelers, with gains for safety and efficiency. Today's big need is more trained river men

CAPT. DONALD L. STEELE, General Operating Manager for Federal Barge Lines, St. Louis, was born into a river family, his father having been a master pilot for more than 35 years. During summer vacations, Capt. Steele worked on river boats and upon graduation from high school in 1934 he went to work as deck hand on a tow boat, working his way up to master pilot. In 1947 he was promoted to port captain of Federal Barge Lines (then government-owned). In 1951 he became marine manager with a company operating ships on the Great Lakes as well as on the rivers. In 1954, after the Federal Barge Lines had been sold to private ownership, he returned to Federal as general operating manager in charge of all the company's operations on the Mississippi, Illinois, Ohio and Warrior River systems and the Gulf Intracoastal Canal.

This article is from a paper presented before the Marine Section, 43rd National Safety Congress, October 1955.



By **CAPT. DONALD L. STEELE**

IN the few years I have been in the river business, I have seen a remarkable change in the barge industry. I started towboating on stern wheel boats, many of which had wooden hulls and high-pressure steam engines with small horsepower.

In a strong wind the old steamboat's high cabin acted almost like a sail, and the pilot had a job on his hands to keep his tow on course. His problem was accentuated by poor rudder power, which was effective only when the paddle wheel was reversed.

Boilers also presented a safety problem since, for one reason or another, steam pressure often built up above boiler pressure



HOW THE TOW looks from the pilot house.

capacity with disastrous results.

Barges had very short, blunt rakes for maximum cubic stowage, and were built for downstream work. They were seldom loaded to a depth exceeding seven feet, even on the big river. For the most part, they were all wood, or a combination of wood and steel, but some were all-riveted steel. Their raceways, or gunnels, were very narrow, ranging from six inches to a foot.

The crew was expected, as a matter of course, to walk along the gunnels performing such routine tasks as laying a steam line from the boat to the head of the tow in order to pump the old wooden barges and keep them afloat. Many such duties, necessary to operation, were carried out without thought of personal danger. Hazardous conditions, such as ice and foul weather, were accepted as part of the job.

In the old days, crews contained a higher proportion of experienced river men, with a good knowledge of safety practices, careful in their work. This was part of the feeling of pride each took in his job.

But the quality of the crews was high not only because the men liked their work, but because the number of men who made the river their calling somewhat exceeded the number of towboat jobs available. I remember an instance on one of the "pool boats" in the Pittsburgh area when every

one of our deck crew was a licensed mate. This sort of thing was, of course, exceptional. At least, there was a healthy balance of jobs and men.

Standard practices in operation and navigation were to wash boilers every week, tie up at night on low water downriver runs, tie up in fog, and to consume as much as 24 hours at landings in dropping and picking up barges, loading stores, fueling, and all the other tasks necessary to keep the boat running.

It would seem that these operations were carried out with maximum safety, considering the lim-

itations of the equipment. Wooden boats and barges, low horsepower, poor maneuverability, predominantly downriver shipping, hours spent tied up in bad weather and landings, and so forth, all add up to inefficient operation by today's standards. Yet because of low operating costs, light competition and good crews, the barge lines at that time could operate at a profit.

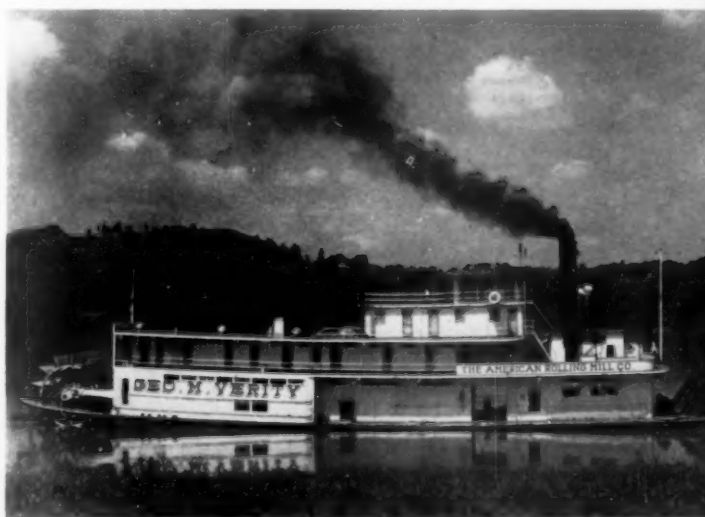
Now let's take a look at today's picture. The stern wheel steamboat has disappeared, replaced by a carefully tailored, multiple-screw diesel towboat, of all welded steel construction.

Diesels like this one are highly maneuverable, both ahead and astern. You can literally drive a nail with such a boat. The cabins are streamlined, low, to avoid the wind and to give a pleasing appearance. Horsepower has gone up from about 500 to an average of 3,000. And it is continuing to rise rapidly. There are several boats today, for example, with as much as 4,800 horsepower.

These sleek new boats are equipped with many other improvements such as streamlined hulls, Kort nozzles, and Contra-guide rudders. They also have many conveniences for the crew's comfort and pleasure, such as lounges, air-conditioning, even television.

Today's towboats have many new safety features. To mention

—To page 173



THE PICTURESQUE sternwheeler, of nostalgic memory, has almost disappeared from river traffic. In its place is the trim and efficient diesel.

A TOWERING OVERCAST blankets London and within its gray expanse hurtle unseen and unseeing a score of air transports from as many different countries. Riding confidently in the cabins of the sleek silver carriers are a thousand souls of diverse creeds and breeds. And, although the great ships weave and cross in an intricate pattern of traffic without sight or sound of one another, all are safe . . . all are secure.

Thousands of times each year this fresco of our sky is re-enacted around the globe—New York, Singapore, Paris, Rio de Janeiro, Istanbul, Stockholm, San Francisco, Rome. For against the background of the world's dark frictions, international air transport has created, like a bright beacon of hope, a record of man's capacity to cooperate with man. And this without surrender of the special religious faith, or pride of race, or loyalty to country, dear to each and every one.

Those who strive for the ideal of human brotherhood at the level of religious organization, or education, or diplomacy, may well note with rejoicing what a high triumph of human capacity for cooperation has been hammered out by pilots, mechanics, engineers and weathermen at the level of daily toil with the tools of the air age.

We who work with these tools have long ago proven to ourselves that for our building, the golden rule is the law of life . . . that dedication to the enforceable safety of others is the one infallible way to assure our own safety.

We who have laced the globe with a method of travel which touches the doorstep of every man, could not do so without a common denominator. We are of every flag and color and faith and ideology under the sun. We had to find a value upon which all our variations could be reconciled without infraction of the creed or pride of any.

And we have found this common denominator in mutual dedication to human safety . . . doing unto others as we would have others do unto us.

Furthermore, in the practical application of this common denominator, we can now testify with certainty that human nature is ready for this discipline of safety. We invoke it every day of every year in every sky of the free world.

Never from the cloudbank above London comes a pilot's voice saying, "Give way to the Union Jack."

Never does a co-pilot cry into his microphone, "I demand priority landing in the name of the one true faith."

Never does a stewardess announce to her passengers, "We will be landing in five minutes because we carry the Star of David on our wing."

Yet, if from that cloudbank comes perchance a call from an obsolete twin-engined plane flying the flag of some obscure little principality, "I've lost an engine and cannot hold my place in the pattern,"



By HOWARD G. KURTZ, JR.

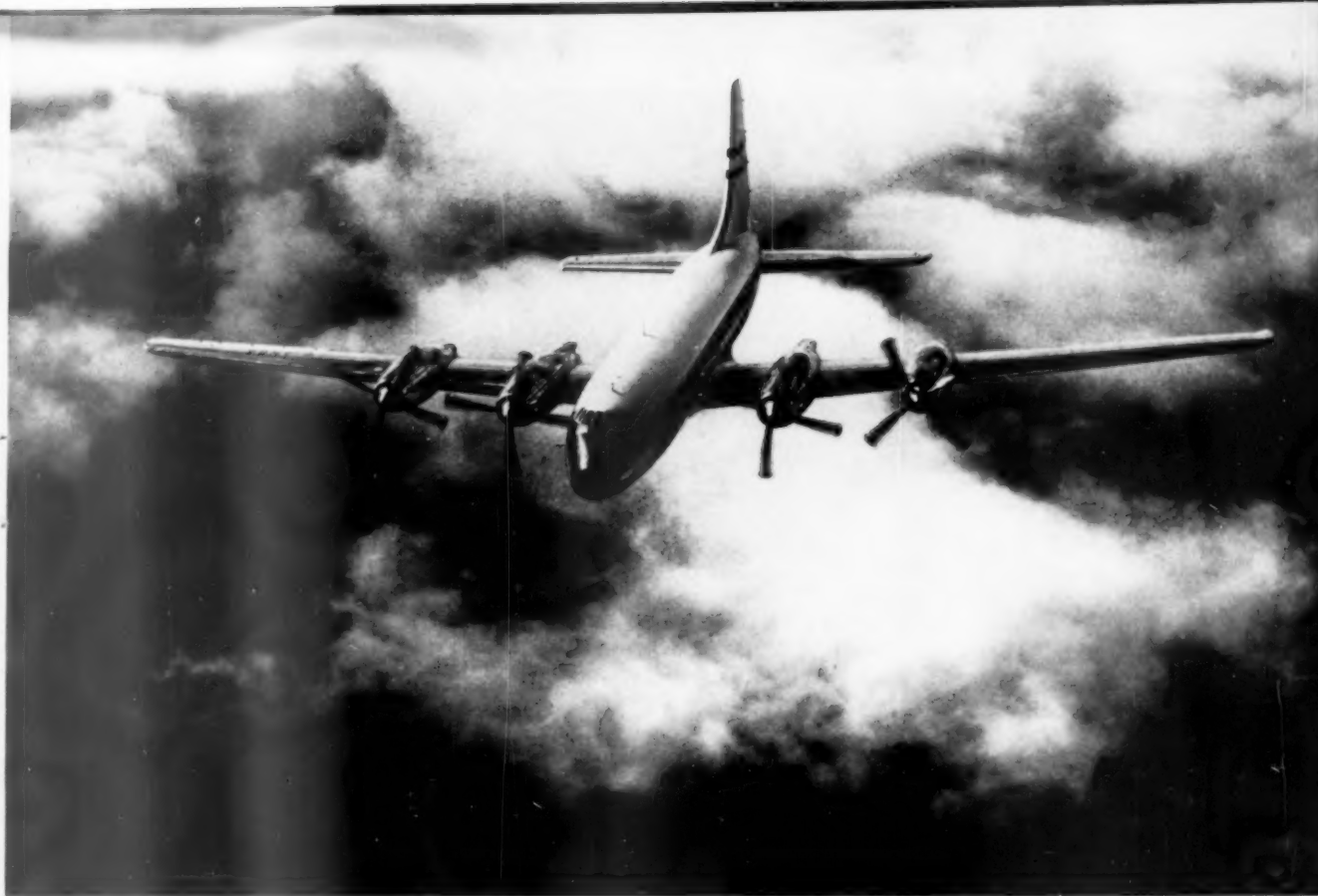
HOWARD G. KURTZ, JR., is Senior Associate in Handy Associates, Incorporated, Management Consultants, New York. He has spent more than 20 years at the operating level of air transport in many parts of the world, including an assignment in Russia. This article, which has been reprinted in many parts of the world, was originally published in the American aviation magazine, *Flying*. It is published through the cooperation of the author who holds the world copyright.

toward

then the great planes of the great flags give way at once and the objective of all concerned concentrates on bringing the little fellow safe to port. Each understands that his own safety would be jeopardized by another plane out of control in the cloud. Any rule less than the golden rule would be too dangerous a principle upon which to build air transportation.

During a recent Christmas season, His Eminence, Francis Cardinal Spellman, flew the scheduled airlines westward around the world from New York to New York, spending Christmas Day in Korea. Some idealist noted that Thailanders, Burmese, Hindus, Pakistanis, Iraqi, Lebanese, Italians, Greeks, Turks, Japanese, et al., had joined in duty to assure the churchman a safe and happy journey, and pointed out that this was a notable tribute to a wonderful man.

Now none could agree more heartily than we that Cardinal Spellman is a wonderful man; but it was



tomorrow

BRISTOL BRITANNIA turbo-prop jet shown here in test flight over England will be placed in service next year by EL AL Israel Airlines, B.O.A.C., and the Canadian Pacific Airlines. (Courtesy EL AL Israel Airlines)

not for this reason that Moslem and Greek Orthodox, Jew and Hindu, Buddhist and Taoist, Protestant and Catholic, and even agnostics among us were instrumental in one way or another in serving Cardinal Spellman. He was a stranger and we took him in with absolute religious tolerance because we cannot afford intolerance. Any less rule would be dangerous...not to the Cardinal but to us. During 1954, we carried some 55 million souls along the airways of the free world with the same concern as that afforded the Catholic churchman. Any human being is a high ranking notable while aloft... and this, not for his, but for our own sweet sakes... we pilots, mechanics, control tower operators and others who have a life and a livelihood at stake.

This safety discipline... this golden rule with the teeth of law... this ideal which is essential to our survival... stems from peculiar characteristics which distinguish it from forcible disciplines.

In the first place, it reflects what we have found to be universal human impulses.

I recall its first conscious impact on my own life. A transport had taken off from Detroit, where I was an airline station manager some 20 years ago. Although icing conditions were not forecast, the captain of the plane soon encountered them, and promptly radioed a warning back to the station. Without any studied idealism, I swiftly notified each other airline office and the Weather Bureau. Within two minutes, teletype lines were flashing the news to distant ports from which planes might be taking off for Detroit, radio messages crackled to all ships in flight around the Michigan area.

This was not disaster. It was not even emergency. It was only potential danger. But when the chore was done I recall the lift it gave me. The mere suggestion of danger had shown that competition among

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FILTERING UNIT
mounted on top of bulldozer cab.

Keeps Out Dust, Lets in Air

By G. G. SCHUKNECHT

DEVELOPMENT of specially designed ventilating units for use on heavy-duty open-pit mining equipment at the Johns-Manville diatomite mine at Lompoc, Calif., has added materially to the health, safety, and comfort of operators of the equipment. Johns-Manville believes the ventilating units may be adaptable to other industries using similar heavy-duty equipment where dust control is a problem.

The Lompoc diatomite deposit, the world's largest, extends over an area of four square miles and is workable to a depth of about 700 feet. Diatomite is a soft, friable material and its quarrying involves digging, loading, handling and transporting.

Diatomite is the fossilized remains of a tiny marine plant, the diatom, which lived and died some 15 million years ago. It is microscopically fine; 2,000 diatom skeletons lined up side by side would stretch a distance of not more

than an inch. Diatomite is used to manufacture a wide variety of products, including fillers and filter aids, synthetic silicates, and insulations.

To mine the diatomite at Lom-

poc, overburden has been stripped from hundreds of acres of deposit, leaving the diatomite exposed to the drying action of sun and wind.

While it has been possible to keep the roadways and active



SIDE VIEW of duct work on electric shovel.

G. G. SCHUKNECHT is Assistant Manager, Johns-Manville Lompoc, Calif., Operations.

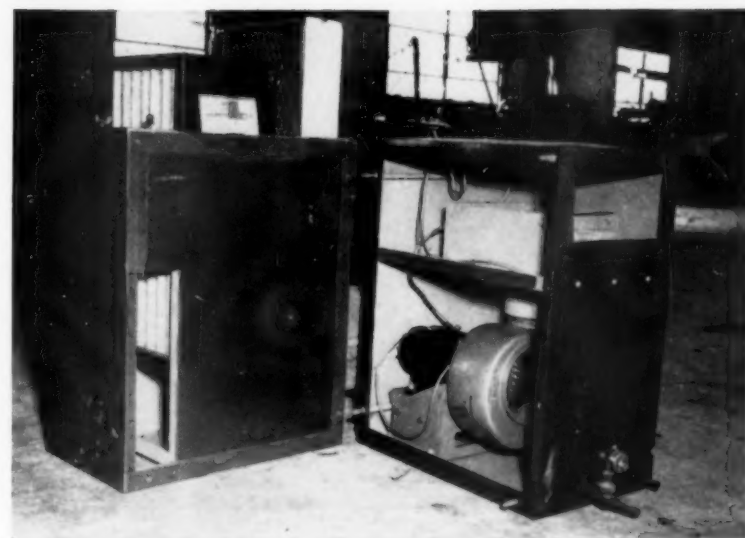
mining areas within the deposit watered down, it is not practical to do this over the vast area not used by quarry traffic.

The deposit is operated as a series of separate but well-integrated working quarries. Twenty-one pieces of heavy equipment, including bulldozers, road graders, power shovels, loaders, and trucks, remove the overburden and haul the crude diatomite directly to storage "glory holes" which are vertical shafts located directly over an underground haulage system.

When needed, the crude diatomite is drawn from the bottom of the glory holes and dropped directly into cars of an underground electric mine train for hauling to the mill.

In addition to the drying action of the sun, aggravated by any breeze, dust is created by the actual stripping and quarrying. An upsurge of activity at Lompoc some years ago created operating conditions in the quarry which dictated having some type of ventilating unit on each major piece of equipment.

Actual engineering work on the ventilating unit project began in 1949 and was successfully com-



VENTILATING UNIT ready to install in Euclid bottom dump truck cab.

pleted in 1955. In providing clean air for equipment operators to breathe, many obstacles had to be overcome.

The most serious of these was the absence of any existing unit to do the job. Johns-Manville engineers conducted experiments with a heavy-duty ventilating unit which proved unsatisfactory and 25 additional manufacturers and

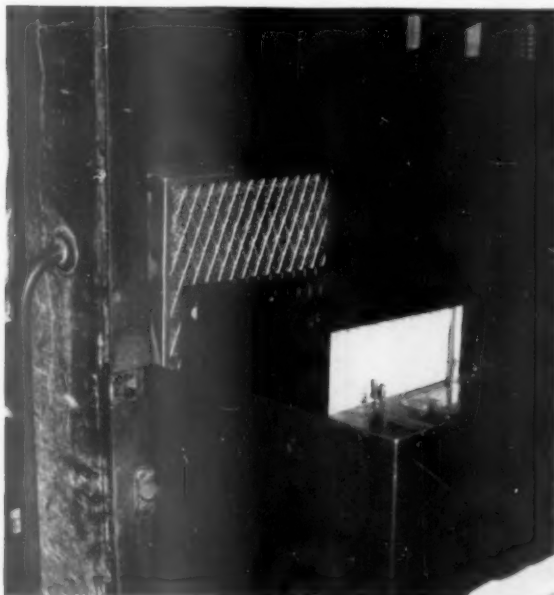
several private engineering firms were approached in an attempt to find a solution to ventilating cabs.

In gathering data on the extent of the ventilation needed, the first step was to take extensive dust counts under every conceivable type of operating condition. The United States Public Health Service and the California Depart-

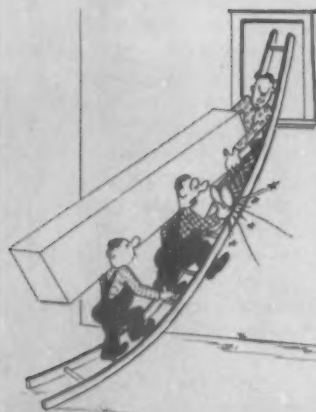
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TRUCK DRIVER holds secondary filtering unit. →

CLOSE-UP VIEW of primary and secondary filtering units in truck cab.



*Inspect
New Ladders
Carefully*



Safe Ladders—Safely Used

By L. W. MARKWARDT

Materials, design and construction are the manufacturer's responsibility; selection, care and use are the buyer's

MANY COMMON beliefs about wood are not supported by fact, and it follows that there are also many popular misconceptions about ladders.

- Do you believe in proof testing a ladder?
- Is it advisable to paint wood ladders?
- How seriously does a knot at the center of a rail affect strength?
- What loads are standard ladders designed for?
- What is the usable length of an extension ladder?
- How do you set up a ladder?

Unfortunately, we continue to have ladder accidents—accidents that result from carelessness, neg-

lect, or lack of appreciation of hazards. We have known home owners who placed too much confidence in a broken side rail inadequately repaired, who tried to

stand on the top of a step ladder, who overreached, or who took other liberties and were injured.

There are four basic keys to ladder safety:

1. Right type of ladder for the job. Determine whether you need a single or an extension ladder, a step ladder, or one of the special purpose types. The first three are the work horses of the ladder family, and serve satisfactorily for general purposes in home, business, and industry.

Other types in common use include platform step ladders, sectional ladders, trestle ladders, and extension trestle ladders.

2. Proper construction. For normal use, a ladder meeting the requirements of the American Standards Association Code for construction, care and use of ladders is recommended. Production of an approved ladder is the responsibility of the manufacturer. Inspection and maintenance after

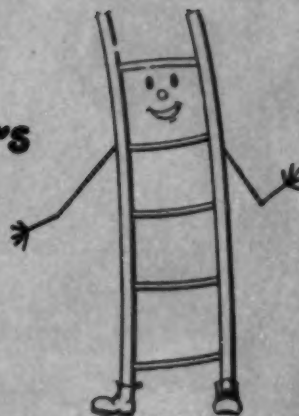


DECAY can usually be detected by visual inspection.

L. W. MARKWARDT is Assistant Director, Forest Products Laboratory, Forest Service, U. S. Department of Agriculture, maintained at Madison, Wis., in cooperation with the University of Wisconsin. This article has been condensed from a paper presented at the Tenth Annual Federal Safety Conference, Chicago, October 1955.



**Some Ladders
Need
Shoes !**



purchase is the buyer's responsibility.

3. Periodic inspection, adequate maintenance, and proper storage are essential factors in insuring serviceability and safety.

4. Development of safe habits. This implies a knowledge of hazards involved and basic safety requirements. Good judgment is most important in developing safe habits.

Because of the importance of the ladder type it is desirable to mention the more common types.

Step ladders are designed to be self-supporting. They have flat steps or treads for foot comfort. A shelf near the top can support a pail or light tools. Standard utility step ladders are not designed for use by more than one person or by a person carrying a heavy load.

Platform step ladders are a rugged, sturdy, safety type of ladder with a working platform big enough and strong enough to support not only a man but also some equipment.

Heavy-duty step ladders are designed for general industrial use. The front section may be provided with flat steps and the back section with rungs; so designed, the ladder can be used by two people working from opposite sides.

Single ladders are the common type of rung ladder used for both interior and exterior work.

Standard extension ladders are conventional rung-type ladders, usually two or three single ladders fitted with suitable hardware that permits joining them and adjusting them to the length required.

Sectional ladders consist of two or more single ladders so constructed that they can be combined to function as a single fixed-length ladder.

Trestle ladders are an industrial type consisting of two sections hinged at the top to form equal angles with the base. They are designed to permit two men to stand on opposite sides when using power drills or for other operations. The trestle ladder may also be used to support a horizontal stage, work platform, or scaffold. When provided with a means of supporting a vertically adjust-

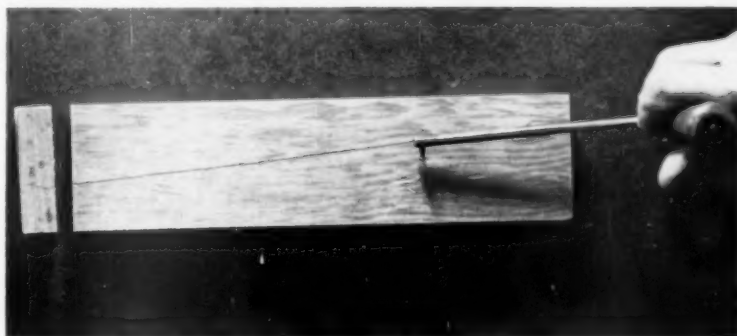
able single ladder, it becomes an **extension trestle**.

These are all commonly used portable ladders. Some serve multiple purposes. Wherever possible, select the type most nearly suited for the job as the first step in attaining ladder safety. Above all, remember the common standard ladders are designed to carry only one person. For more than one person, or for unusual loads, heavy-duty ladders are required.

Construction

To establish minimum standards for production of safe ladders, the American Standards Association has organized a committee with the title, American Standard Safety Code for Construction, Care and Use of Ladders, Committee A14. There is available from the ASA American

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INSPECTOR pulls scribe in the grain direction. Point follows grain, permitting ready inspection of the slope.



A 117-TON LIFT. A turbine generator being lowered onto a railroad flat car by means of four 1 $\frac{3}{8}$ -in. diameter wire rope slings. Safety endings, visible just below the crane hooks, were used with grommet-type slings. With these fittings, wire ends are permanently secured under steel collars.

Let's Be Practical About Sling Loads

By H. M. WILSON

Efficient lifting means ample strength for stresses beyond the load weight but not slings that are needlessly heavy and cumbersome

IT has been said that the serious troubles in life are the result not of bad things, but of abuse of the very good things. In a measure, this is true of safe loads applied to slings.

Safe loads were originally set as the maximum weight which could be safely lifted and still provide an adequate safety factor for the variables inherent in every lift and apart from the particular hitch employed.

A safe load, taken alone, can be arbitrarily set at any figure, within the breaking strength of the sling, through the expedient of varying the safety factor applied. Unfortunately, sales pressure in some cases forced such action to improve a competitive position or to meet a specified sales load with an inferior product.

Without standardization the term "safe load" became discredited and useless. To provide such standardization it became necessary to specify the safety factor at which the safe load was to be determined. This provided a safe basis of operation and secured a more accurate definition of the actual strength of slings furnished.

Unfortunately, two mistaken ideas developed in the practical application of safe loads.

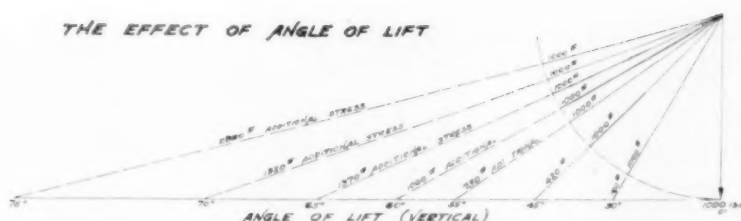
First, because certain information relating to the behavior of sling materials under particular lifting conditions was not available, it became common practice to increase the required safety factor to excessively high figures. This results in slings being needlessly heavy and cumbersome, and causing increased cost in lifting operation.

The second mistake is made by many riggers who fail to understand the true reasons for the setting of a safe load. They believe that where a safety factor is specified it means that the sling should safely lift a load just under a weight equal to the stated safe load multiplied by the required safety factor.

This is not true, because, as we shall see in the discussion follow-

H. M. WILSON is Sling Engineer, American Chain and Cable Company, Bridgeport, Conn.

THE EFFECT OF ANGLE OF LIFT



ADDITIONAL STRESSES imposed on slings by angle of lift. A 1,000-lb on each leg of the sling is increased by 2,860 lbs. at a 75-degree angle.

ing, there are additional stresses beyond the load weight in every lifting operation.

We should first examine the purpose in setting a safe load, before analyzing the many factors which must be considered in its determination.

If all riggers were acquainted with the stress-producing elements in a lift, and could accurately evaluate the amount of such stresses, the ideal situation would be one where only the ultimate strength of the sling was given and the rigger would select the sling having sufficient strength to meet the stresses and still provide an adequate safety factor under his conditions of lift.

Any safe load can be effective only for a specified condition of lift since the stress loadings are subject to wide variation in intensity with only a slight change in conditions.

It is assumed that any man entrusted with the selection of the sling for a given lift should have knowledge of the actual weight and the peculiar stress characteristics of the hitch which will be employed. However, types of stresses are inherent in every lift, regardless of hitch, yet are determined by factors requiring a trained engineer employing precision instruments to measure accurately.

A practical safe load is one making provision for meeting these variables, which are apart from the hitch used and found in every lift. It should be set to give protection not only when the sling is new, but should provide a margin to cover deterioration in sling strength.

Provision should be made for reduction in safe load to compensate for additional stresses resulting from the particular hitch em-

ployed for the lift, and for anticipated conditions of unusual nature increasing stress in or lowering the strength of the sling.

Let us consider a lift of normal type and determine the stresses

which will result from the weight of load and the lifting operation, but eliminating any consideration of hitch of abnormal condition.

The normal stress in a sling supporting a load or lifting it at a constant rate of speed is equal to the weight of the load. However, the moment a load is started, it is transformed from a static to a dynamic load and a momentary stress of two times the load weight is set up in the sling.

This stress is separate from the stress resulting from acceleration. It is not possible in a practical lift to affect this transition without some acceleration, therefore

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Loss in Strength of Wire Rope Slings Under Various Conditions of Bending

The table of strength losses given below is derived from the following sources:

1. Paper No. 229—National Bureau of Standards.
2. A.S.C.E. Report of Tests by Douglas M. Stewart.
3. Investigations of Carstarpen—reported by A. S. Rairden.
4. Supplemental Tests made by V. C. J. Peterson and W. A. Loewen, of Wire Rope Research to complete the scope of original investigation or to determine apparent variances.

The foregoing information was reduced to a series of curves which were then adjusted for variances resulting from the different test methods followed by the investigators. Therefore, the values given in the following table are averages only.

LOSS IN STRENGTH—180° Bend Per cent of Catalog Strength Lost

Ratio Radius of Bend Rope Radius	Ordinary H.C. Wire Rope	Preformed Wire Rope	
		H.C.	IWRC
16:1	9.0	4.2	6.0
10:1	20.0	6.6	8.0
8:1	24.0	9.0	9.5
6:1	29.0	17.0	15.0
4:1	33.0	25.0	19.0
3:1	41.0	31.0	26.0
2:1	48.0	40.0	32.0
1:1	55.0	46.0	40.0

1. Where bends do not exceed 90° use the following percentages of above values:

Ordinary H.C.	Preformed H.C.	Preformed IWRC
75 per cent	60 per cent	45 per cent

(In addition to loss in strength the additional stress resulting from the angle involved must be considered.)

2. Loss in strength appears to be retained in subsequent straight lifts in approximately the following percentage of table values:

Ordinary H.C.	Preformed H.C.	Preformed IWRC
30 per cent	25 per cent	12.5 per cent

Both types of Hemp Centered Wire Ropes are erratic in their reactions and are subject to considerable variation from the average. Retention of strength loss appears cumulative.

IWRC, Preformed, is highly consistent (variation under 5.0 per cent) and Strength Loss, other than actual destruction of rope, is not cumulative.



BEFORE: Baling pit operator is exposed to severe noise.



AFTER: Enclosure protects operator's hearing.

Reducing Noise Is a Tailor-Made Job

Your problem may require personal protection, reduction at the source, sound absorption, or a combination of all three

By J. C. RADCLIFFE

THERE have been numerous articles in scientific journals regarding specific noise control jobs. Usually they follow prescribed avenues of control. But each one, even though following a certain avenue, must be tailor-made for the specific noise source.

If your company is planning a new building or manufacturing site, you are fortunate. Many dollars can be saved by building in noise control features. The laying out of work processes, the loca-

J. C. RADCLIFFE is Supervisor, Industrial Hygiene Unit, Ford Motor Company, Dearborn, Mich. This article is from a paper presented at the session "Noise—And What to Do About It," Forty-third National Safety Congress, October 1955.

tion of noisy machines and the segregation of as many workers as possible from noisy areas will do much to minimize your future problems. (The article by Bonvallet and Karplus, in the December 1953 *AIHA Quarterly*, gives general bands of noise levels to be expected in different types of industries, and specifically those being produced by different types of machines and processes.)

Operations involving impacts will be noisy, especially on large metal plates. Balancing noise reduction against costs of changes in work-processing must depend on particular applications. The following list of changes is given as a few obvious examples of alternate processes which cause

noise reduction, without regard to economic factors. This is a guide for the engineer:

1. Welding instead of riveting.
2. Compression riveting instead of pneumatic riveting.
3. Pressing or rolling instead of forging.
4. Grinding instead of chipping castings and welded joints.
5. Electrically-operated tools instead of unquieted pneumatic tools.
6. Selection of less noisy types of conveyors.
7. Avoidance of dropping hard materials during handling.
8. Mechanical stripping of work from dies instead of air blast stripping.
9. Low speed process machinery instead of high speed machinery.
10. Substitution of materials; for example, fabrication of plastics is usu-



SCRAP HANDLING TUB equipped with rubber wheels, instead of steel, is a good example of reducing noise at the source. Lubrication also helps.

ally less noisy than sheet metal fabrication.

11. Wide spacing banks or rows of noisy machines instead of close spacing.
12. Hot working of metals instead of cold working.
13. Belt drives instead of noisy gears.
14. Substitution of less noisy materials used in friction processes, as in brakes and clutches.

Personal Protection

The use of ear protectors may be indicated under conditions where noise cannot be controlled by engineering. Nearly all ear protectors are effective in the high

frequency region, but at low frequencies, where a tight fit is important, there is less need for attenuation.

Contrary to usual opinion, speech understanding in a high noise level is often improved by ear protectors. The noise is reduced as well as the speech, and the speech-to-noise ratio is unchanged, but the levels at the ear are in a region where there is less distortion and better understanding.

The principal difficulties in using ear protectors are sanitation and discomfort, but these handi-

caps are being overcome. Enforcing the wearing of ear protectors is usually more difficult than enforcing safety goggles or shoes, but alert management can popularize and win their acceptance.

Reduction at the Source

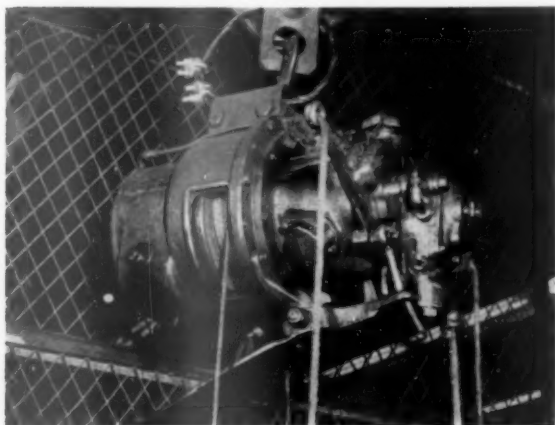
Prevention of noise at its source appears to be a promising method of noise reduction. It is often difficult or impossible, since noise energy may be an unavoidable portion of the mechanical work done. Methods of reduction which follow are listed under types of noise sources:

Impacts: Where a material is hammered, sheared, tumbled or peened, the impact is a necessary part of the work and is always accompanied by noise. It is difficult to reduce this noise. However, if an impact can be made less sudden, the noise will tend to change from a sharp crack to a thud and will be less objectionable.

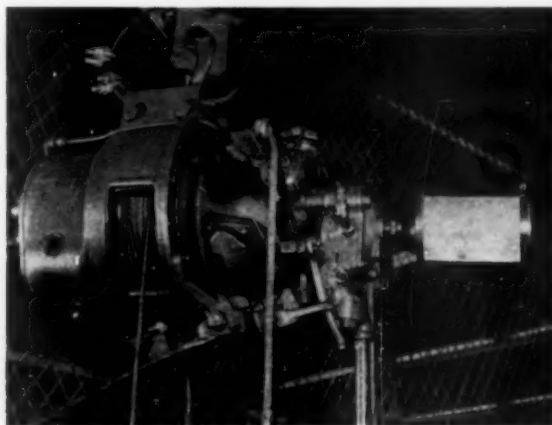
In a punching operation, one portion of the die can be made to enter the work first and convert the process into a shearing action. When punching involves a multiple die which makes several holes at one stroke, the die can be stepped to convert a single intense impact noise to several lesser noises.

Prevention of unnecessary bounces from a hammer-type blow also will be effective. In tumbling, impact noise on the con-

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BEFORE: Air hoist without muffler made loud hissing or roaring noise.



AFTER: Noise from hoist was reduced 10-15 db. by simple muffler made of a can filled with steel wool.



MILLWRIGHT Bob Smoogen expresses his appreciation for the goggles which saved his eyes from 800 F. molten zinc. Scars on face and ear show where zinc splashes burned him.

EYE PROTECTION IN ACTION



THE PERSONAL TOUCH



"GAFFER NEWS" asked its readers, "Are YOU Wearing One of These?" They are (1) didymium spectacles, (2) foundry goggles, (3) didymium snap-on spectacles, (4) sidescreen goggles, (5) furnace spectacles, (6) heavy-duty chipper's goggles, (7) dust goggles, (8) sandblast goggles, (9) welder's goggles, (10) mono-goggles, (11) heat helmet, (12) acid goggles, (13) plastic front face shield, (14) welder's helmet, and (15) copper wire mesh front face shield.

DOES your company's employee publication have trouble finding safety stories that are interesting enough to get readership and urgent enough to encourage action?

This is one of the toughest jobs faced every issue by company publication editors, and John T. Lanahan, editor of *Gaffer News*, Corning Glass Works' eight-time-a-year newspaper, is no exception.

Editor Lanahan and his colleagues faced the fact that no house organ can claim a captive audience; an employee will not read a company publication simply because he works there.

The magazine or newspaper must be lively, interesting, and have a personal appeal. The same goes for the safety story.

With this in mind, *Gaffer News* editors were quick to spot a tailor-made lead and an opportunity for a lively eye protection layout when a millwright was saved from serious eye injuries thanks to his safety goggles.

Bob Smoogen was pouring molten zinc from one container to another when some of the hot metal splashed into his face, melting the rims of his goggles. Though he suffered facial burns, his eyes were untouched.

Within hours, a staff reporter interviewed Bob Smoogen and asked, "What do you think of those goggles?"

"I was so happy I pulled 'em off and kissed 'em!" was the prompt reply.

Here, in 11 words was an eye-catching lead for the story and a chance for a fine photo. Had the interview come two weeks later, the accident victim might have forgotten his original reaction and might have neglected to mention kissing the goggles. Moral: "Get 'em while they're hot."



LEATHER heat helmet, for use when making hot repairs, gives eye, face, and shoulder protection against chips and heat.



FURNACE spectacles protect this man as he looks directly into the tank to record high temperature readings.



COPPER wire face shield reflects heat away from the face during pot-filling operations.

The next issue of *Gaffer News* carried the picture and a 150-word story on the accident. Reader interest was built up on a *personal level*, so the story moved on to a two-page wrap-up on Corning's eye protection program. The keynote was brevity—short, punchy copy.

The layout included five case histories from the Wise Owl Club (men whose eyesight has been saved by eye protection) with the stories told in the men's own words (again the personal touch), a photo showing 15 kinds of goggles made available by the company, eight photos showing how eye protection is used on the job, a short article on eye care by the company medical director, two more photos on how goggles can keep out dust, and a humorous short item showing five ways to wear safety glasses.

What about results? This is always hard to measure, but within a week after the newspaper appeared the company's main plant reported a noticeable increase in requests for goggles. And in private conversations employees dropped enough words and hints to let the editors know that at least parts of the story had been widely read and that it had made an impression—which is par for the course.



PLASTIC front face shield is essential when handling acids or working around salt baths.



MONO-GOGGLES offer protection for close grinding jobs.



SANDBLAST goggles come in handy where ceramic or glass chips may fly.



WELDER'S goggles are important on this acetylene job.



Clean Air for the Roundhouse

When the diesel replaced the iron horse on the B. & M., it created a ventilation problem in the roundhouse. It was solved through cooperative efforts of the railroad and the State Division of Occupational Hygiene

By HAROLD BAVLEY

IN ITS rapid conversion from steam to diesel locomotives the Boston & Maine Railroad encountered an unforeseen health hazard among maintenance crews at the roundhouse at Somerville, Mass.

When the roundhouse was constructed in 1929, adequate provision was made for removal of

HAROLD BAVLEY is Engineer, Division of Occupational Hygiene, Massachusetts Department of Labor and Industries, Boston.

steam and smoke. Each track had its own naturally ventilated "steam jack" to accommodate the exhaust of the coal-fired engines. There were no complaints from any of the employees of the roundhouse during this era.

With the introduction of the diesel locomotive, these facilities were no longer adequate. The discharge stacks of the diesel units could not be located in the same places as those of the steam engines, and hence, could not be

properly positioned under the ventilating hoods. The exhaust gases of the oil-fired diesel, unable to escape through the steam jacks, diffused into the working atmosphere. The discharged gases containing various concentrations of toxic "nitrous fumes," carbon monoxide, and acrid aldehydes resulted in complaints of eye, nose, and throat irritation experienced by some of the employees.

None of the employees became ill, but those exposed were an-

noyed by the nuisance created by the smoke and gases. This effect was more noticeable during cold weather when it was necessary to keep the doors to the building closed.

The employee's union, in cooperation with company officials, requested the technical assistance of the Division of Occupational Hygiene of the Massachusetts Department of Labor and Industries in evaluating the potential health hazard in the roundhouse. The state's chemists obtained samples of the atmosphere within the roundhouse, particularly in areas in which there was the greatest activity, and hence, the largest number of complaints. Tests were made for nitrogen dioxide, carbon monoxide, and aldehydes.

In no case were concentrations of the pollutants found to exceed the maximum allowed by the Department of Labor and Industries. There was an absence of carbon monoxide, only small traces of irritating aldehydes, and for the most toxic constituent, nitrogen dioxide, an average of one part of nitrogen per million parts of air during one series of tests and twice that average during another series of tests. In Massachusetts



FRESH AIR is drawn from outside, heated to desired temperature, and distributed by supply air system through working areas in Somerville, Mass., roundhouse.

the maximum allowable concentration of nitrogen dioxide during an eight-hour working day is 10 parts of nitrogen per million parts of air.

The low test values found for nitrogen dioxide are not considered indicative of a health haz-

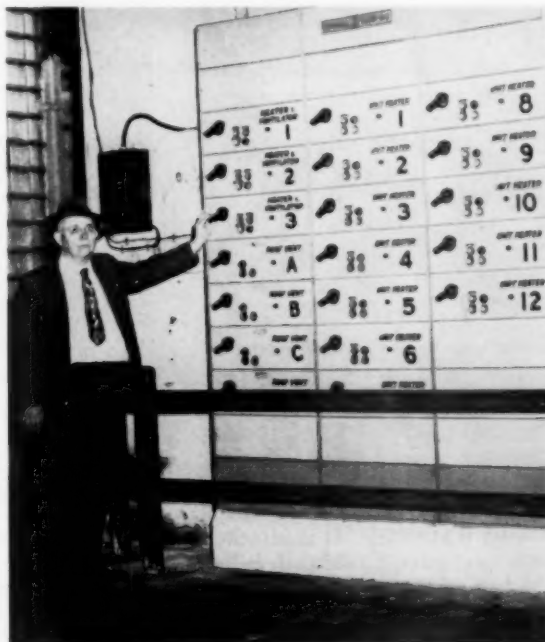
ard. They are used primarily as an index of the total concentration of diesel exhaust gases, since all of the irritating constituents of such gases have not been completely identified.

When the concentration of ni-

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SHEET-METAL and fabrication crew prepare to move a section of duct.



EACH SECTION of the heating and ventilating system can be controlled from this panel.



SAMMY SAFETY'S NOTEBOOK

By Arthur S. Kelly

Industrial Department, NSC

Detroit Safety Man Wins April Award

THE WINNER among the April entries to "Sammy Safety's Notebook" is Stuart C. Curtis, safety director, Burroughs Corp., Detroit, Mich., who submitted the idea for an electrically interlocked safety door for a roll straightening machine.

We are receiving just enough entries to fill these pages each month, but with all the good ideas we know are in your plant and hundreds of others, we should not have to operate on this hand-to-mouth basis.

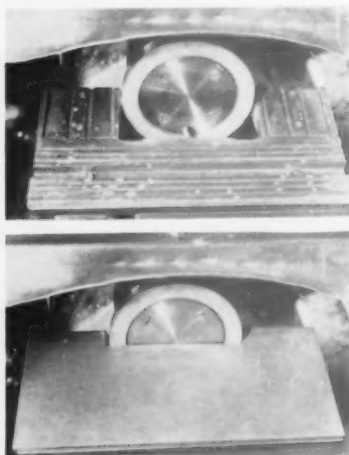
The awards for January and

February have been mailed. For a note on how these awards were presented turn to "Showmanship in Safety" on page 56 of this issue.

This month we have a "stable entry" from F. R. Barnako, of the Bethlehem Steel Company. We'd like nothing better than to have so many entries that we'd have to make a decision on which to use—or have to make duplicate awards because two entries were selected as winners for the month. Your entry usually has a one to four chance to win one of the prizes—your choice between a Parker 51 fountain pen or a desk lighter in black and gold Italian marble.



RAIL STOPS in position.



Grinding Wheel Table Rest

TWO STEPS in making a grinding wheel safer are shown in these pictures taken at the National Supply Company, Torrance, Calif. Top: a hardened steel plate, conforming to the recess of the wheel, fills up that recess. It is attached with four screws, 1/32 inch below the face of the wheel. Bottom: a secondary table rest fitting closely around the wheel covers holes in the original rest through which a tool might accidentally be dipped.



RAIL STOPS recessed cover plate raised.



RAIL STOPS recessed cover plate in place.

Rail Stop

THE RAIL STOP shown is used on narrow gauge track. The 1/2-in. steel cover plate is hinged at the back, with the hinge bent to allow the plate to lie flush with the floor. The rail stop itself is 1 1/4-in. plate.

One man can raise or lower the stop in less than a minute, using a hand hook. The rail stop can be installed permanently at any desired location.

Submitted by F. R. Barnako, manager, Compensation and Safety, Bethlehem Steel Company, Bethlehem, Pa.



Safety Signal

PATTERNED after a standard traffic signal, this device is mounted overhead outside the tool crib. The sides are 10 x 10 x 30 in. and the 8-in. windows are red, yellow, and green from the top.

A 15-second timer inside the box changes the lights in sequence from top to bottom, lighting up each word in turn. Different messages appear on each of the four sides.

Submitted by B. R. Lewis, safety engineer, Hercules Powder Company, Cumberland, Md.

Track Flag Standard

THIS ALL-METAL railroad track flag standard has only one moving part—the hinge on the rail-head clamping device. The clamp is $\frac{1}{4}$ in. plate steel, 3 in. wide. The blue circular sign is $\frac{1}{16}$ in. thick and 1 ft. in diameter.

The rest of the standard and the department symbol are painted in yellow. The glass in the lantern, for night use, also is blue.

Submitted by F. R. Barnako, manager, Compensation and Safety, Bethlehem Steel Company, Bethlehem, Pa.



Barrel Stop

THIS STOP IS CONSTRUCTED so barrels being placed in the racks will roll over the stop, which swings inward and down. However, the cross piece of the rack prevents barrels from rolling forward off the rack.

Submitted by William F. Bachman, safety director, Omaha Public Power Company, Omaha, Neb.

VAPOR DEGREASERS

Published by National Safety Council

425 North Michigan Avenue, Chicago 11

Process

1. Vapor degreasing is the process of cleaning metal objects of grease, oil, and dirt (which adheres to the grease and oil) by condensing organic vapors on the surface of the metal. The degreasing apparatus produces a controlled cloud of vapor at its boiling point. The work is immersed so that the vapor condenses on the surface. The liquid rolling down the surfaces cleans the metal parts. The parts dry as they are removed from the vapor area so that they may be delivered to the next process

This Data Sheet is one of a series published by the National Safety Council, reflecting experience from many sources. Not every acceptable safety procedure in the field is necessarily included. This Data Sheet should not be confused with American Standard Safety codes, federal laws, insurance requirements, state laws, rules and regulations, or municipal ordinances.

ess clean, dry, and ready for further work or storage.

2. Trichloroethylene, perchloroethylene, and ethylene dichloride

are commonly used in degreasing solvents. Other chlorinated hydrocarbons and some other types of solvents are used occasionally.

3. Types of degreasing equipment generally recognized are:

- a. Manual degreasing tanks, in which the work is introduced and removed manually or with a simple hoist.
- b. Automatic tanks, in which the work is introduced and removed mechanically, usually by a conveyor system.
- c. Slush tanks, in which the work is generally introduced and removed manually, but is also slushed or washed with a liquid degreasing agent from a hose or nozzle.

Hazards

4. A main hazard in vapor degreasing is inhalation of solvent vapor. Also, excessive contact of the skin with the liquid solvents will produce a dermatitis, as is the case with any good fat solvent.

5. Under certain conditions, trichloroethylene and ethylene dichloride will burn, although the chlorinated hydrocarbons are generally noncombustible. The main fire hazard arises from the sludge from the bottom of the degreaser when it contains powder or dust of the light metals.

Design

6. Most of the hazards involved in vapor degreasing can be eliminated by proper design of the apparatus. To minimize the dissipation of solvent into the working area, the machine should be sized for the work which is to be done and should not expose an unnecessarily large solvent vapor area to the air of the workroom.

7. The heat input must be sufficient to keep the degreaser operat-

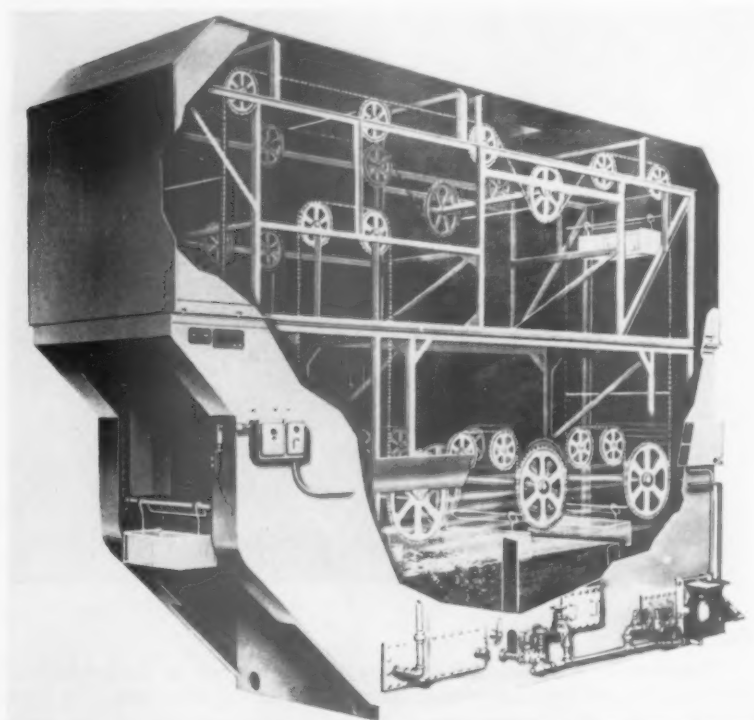


FIGURE 1. Three-compartment automatic solvent degreaser, cut away to show path of material on conveyor through equipment. (Photos courtesy Detrex Corp.)

ing efficiently under its maximum work load. This heat input must be balanced by a sufficient amount of cooling medium and large enough condensing surfaces, preferably on all four walls of the machine, to condense all the solvent vapors produced by the machine at its maximum heat input.

8. When the machine is in operation, the distance from the vapor level to the top should be not less than three-fourths of the working width of the machine.

9. It is strongly recommended that a thermostat be provided in the freeboard zone, so set that if the vapor rises somewhat above the normal level, the heat input to the machine will be cut off.

10. A thermostat is also necessary in the heated liquid chamber to prevent the degreasing fluid from being heated to a temperature at which decomposition might start. The degreasing fluid can become overheated from normal contamination with oil and grease, which raises its boiling point, or because too much fluid collects in the liquid chamber.

11. Liquid thermostat settings should be not higher than 250 F. to 265 F. for trichloroethylene and not higher than 295 F. for perchloroethylene. Best practice calls for cleaning the degreaser when the liquid temperature in trichloroethylene reaches 195 F.

12. If the solvent used in the degreaser has a boiling point below that of water, a water separator arrangement should be incorporated in the apparatus to prevent the formation of solvent-water mixtures, which are less efficient than the solvent and more readily dispersed into the atmosphere because of their being continuously boiled in the liquid chamber.

13. The arrangements for suspending the work in the degreasing tank must be such as to avoid fanning the vapors out of the top of the tank or displacing the vapors over the top of the tank when admitting or removing work, or causing dragout of solvent liquid in other ways. Racks and suspen-

sion devices should be made of nonporous materials since porous materials will increase the dragout of solvent.

14. Where the units to be degreased weigh over 25 pounds, hoists should be installed on manual degreasers. Each such hoist should have a governor which will limit its operating speed to a maximum of 11 feet per minute.

15. Clean-out doors should be provided on degreasing tanks if the sludge cannot be safely worked out and the interior of the liquid tank cleaned up from the floor level. The usual rule is that clean-out doors are provided if the area of the tank is more than 300 square inches.

16. On steam-heated degreasers, the steam pressure should be restricted to a maximum of 15 psi gauge for trichloroethylene or 60 psi for perchloroethylene. There should be a relief valve set at no more than 5 psi above the working pressure, in the steam line ahead of the degreaser.

Installation

17. A degreasing tank should be so located that there is no direct draft over its top. A direct draft, either from a fan or from an open window or door, is likely to lift the vapor over the freeboard of the tank by a sort of venturi effect and contaminate surrounding work areas. The tank should be installed in a well-ventilated area so that the solvent vapor which is inevitably dragged out with the work will be quickly removed.

18. It is often necessary to install the lower half of the degreasing unit in a pit in order to have the upper part at a convenient working height. The arrangement and size of the pit should be such as to permit ready access to the clean-out door. Enough room should be provided above the machine to facilitate removal of the sludge.

19. The pit must be mechanically exhausted with a system capable of producing two air changes per minute. Suction should be taken from the lowest point in the

pit and as near as possible to the clean-out door. The pit must be well drained.

20. Since the chlorinated hydrocarbons are readily decomposed by hot surfaces or open flames, degreasing units should be located at least 50 feet from apparatus having surface temperatures above 500 F. and equipment which is near a degreaser and contains open flames must be exhausted outside the building.

21. Because the products of decomposition of the chlorinated hydrocarbons are highly corrosive and acid, the vent pipes from such open flame equipment should preferably be of corrosion-resistant material, such as ceramic tile or asbestos cement panels.

22. Operations producing strong ultraviolet radiation, such as arc welding, cause decomposition of chlorinated hydrocarbons. They should always be kept remote from degreasing tanks and away from any possible contact with the vapors.

Operation

23. Operators must be well instructed in good work techniques and must follow these techniques if contamination of the area with solvent vapor is to be avoided.

24. It is most important that the machine be operated so as to create a minimum disturbance of the vapor level. Excessive work loads condense the vapor too fast and lower the vapor level. For this reason, the weight of the unit loads must not exceed that which the machine can properly accommodate.

25. A type of pumping action and also mechanical disturbance of the vapor can be produced by putting work into the degreaser and withdrawing it at too high a rate. The vertical rate of movement should be not more than 11 feet per minute.

26. It is important that the work be removed from the degreaser at such a rate that it will be thoroughly dry before it comes out from the freeboard. To assure that the work will be completely dry,

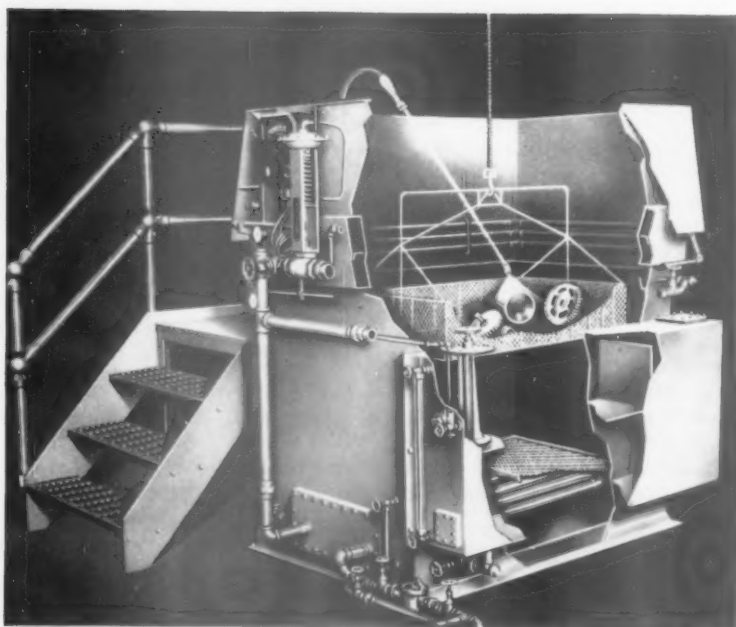


FIGURE 2. Hand-operated solvent degreaser, showing steam heating coil, cooling coil, water decanter, and slushing hose.

it should be left in the vapor until no more liquid condenses on the surface, and should then be removed slowly.

27. To prevent possible decomposition of the solvent by overheating, the level of the boiling solvent should never be allowed to drop below the top of the heating element.

28. Operations which do not involve bringing the work into or out of the degreaser, such as slushing off the work with liquid solvent or transferring the work from compartment to compartment within the degreaser, should always be carried on well below the vapor level.

29. Work pieces which contain recesses and cannot be stacked so as to drain themselves should be agitated while held below the vapor level in the tank. Sufficient energy to displace all the liquid solvent should be applied. Otherwise, the part should be emptied and dried in a mechanically ventilated area so as not to contaminate surrounding work areas.

30. It is important that the temperature of the cooling water be maintained within a range which

provides enough cooling to control the vapor level and assure heat balance, but does not cause excessive condensation. The manufacturer gives the temperature range for the solvent for which his equipment is designed. The temperature range is selected to yield efficient degreasing action with minimum loss of solvent.

Maintenance and Inspection

31. All degreasing tanks and their accessories should be inspected at regular intervals to assure the efficient operation of ventilation systems, water separators, and other devices necessary to safe operation, such as thermostats and relief valves. Inspectors should also check to see that instruction cards and warning plates are properly in place on the machines and that safe operating practices are being followed.

32. The tanks should be cleaned from time to time to remove the sludge which normally collects and to separate the solvent from the oil and grease with which it is polluted.

33. The solvent should be

drained off with as little exposure to the air as possible and either set aside in closed storage drums or sent directly to the still for distillation from the oil.

34. If possible, the tank should be cleaned from the outside. The operator should be provided with proper personal protective equipment for the job. On a small job, he may wear a chemical cartridge respirator and splash-proof goggles.

35. On larger tanks where there may be fairly heavy contamination of the air, the operator should wear a gas mask or an air line respirator, splash-proof goggles, and rubber or synthetic rubber gloves.

36. Where the operator must enter the tank to clean it, he must be equipped with a supplied air respirator and with a safety belt and line. He should be protected with rubber gloves, rubber jacket and pants, and rubber boots or overshoes.

37. Another operator should remain outside the tank with no other duties than to check on the man inside the tank. The outside operator must be equipped with a supplied air respirator in case he should have to enter the tank to rescue the man inside. A tank should always be cooled and ventilated before men enter it no matter what protective equipment they may wear.

38. Sludge removed from the tank should immediately be placed in tightly closed metal containers until it can be taken away for disposal.

39. The degreasing tank should always be thoroughly cleaned and ventilated before repairs requiring a man to enter the tank or welding either inside or outside is undertaken. If there is any doubt as to the presence of solvent vapor, respiratory protection, as outlined in paragraph 36, should be provided for all repair men.

Symptoms of Poisoning

40. Degreasing solvents all have anesthetic properties if inhaled in large quantities. Concentrations

which will produce anesthesia or death will generally be found only inside the tanks during tank cleaning. In somewhat smaller concentrations, degreasing solvents may cause dizziness, nausea, or a condition similar to alcoholic intoxication.

41. Prolonged or repeated inhalation of quantities too small to cause acute intoxication may cause repeated subacute or chronic poisoning. For more precise descriptions of the types of intoxication produced by these solvents, the data sheets on specific solvents, as listed in the references, should be consulted.

Allowable Concentrations

42. The threshold limits of trichloroethylene, perchloroethylene, and dichloroethylene are listed by the American Conference of Governmental Industrial Hygienists at 200 parts per million by volume. The compounds can be detected by odor at somewhere between 25 and 100 parts per million.

43. If there is any question as to whether toxic amounts of vapor are being released into the air of the workroom, samples should be taken for chemical determination of the amount of vapor present.

44. There are a number of methods of determination. The simplest is the halide lamp test, in which the concentration of solvent vapor in the air is approximated from the flame color. Since general experience with such sampling shows that concentration of these vapors in the air varies between wide limits, samples should be taken often enough and for a long enough period per sample to assure that average conditions are represented.

Ventilation

45. Vapor control of degreasing tanks is obtained mainly by proper installation and proper operation of the tank. In the absence of proper installation and proper operation, exhaust ventilation will not provide control. It will, however, control the relatively small amount of excess vapor which is sometimes lost from even a well-operated tank.

46. When it is advisable to install an exhaust, it should be in the form of a slot along one or more edges of the tank, depending on the conditions. The most common arrangement is a slot along each of the long edges of an oblong tank or a slot along each edge of a square tank.

47. The air volume undertaken should be a minimum of 100 cfm per square foot of tank area. If the situation is not under proper control otherwise, this air volume may have to be increased in accordance with the provisions in *Ventilation of Open Surface Tanks*, Code Z-9, American Standards Association.

Physical Examinations

48. In the final analysis, the physical condition of the operators will indicate whether the engineering controls, design, location, and operation of the tanks are safe and efficient. Preplacement and periodical physical examinations provide the necessary yardsticks for keeping a constant check on the operators' physical condition, and also serve to spotlight any abnormal condition arising from exposure to the vapor. These examinations should be supplemented by laboratory tests for albumin in the urine, sugar in the blood, and liver function.

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ACKNOWLEDGEMENT

The original draft of this Data Sheet was prepared by the New Jersey Chapter of the American Society of Safety Engineers. It has been extensively reviewed by Council members and approved for publication by the Publications Committee of the Industrial Conference of the National Safety Council.

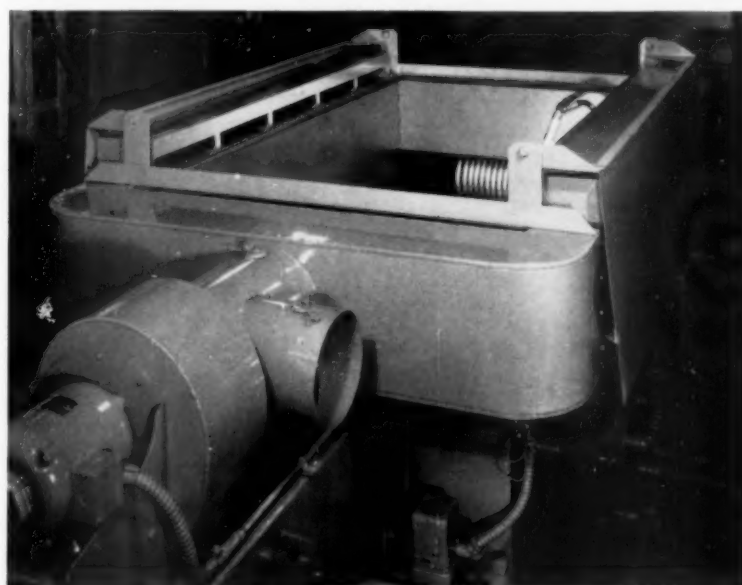


FIGURE 3. Slot-type hood for hand-operated degreaser. Note duct connection at fan inlet for pit exhaust ventilation.

Inter-American Safety Council—

The "National" of Latin America

By W. T. ROGERS

WHAT is the Inter-American Safety Council? When anyone asks me this I reply, "It is the National Safety Council of Central and South America."

The Inter-American Safety Council was founded in 1938 by a group of public-spirited citizens whose business visits to Central and South America had shown them the great need for safety work in the Latin republics. Chief aims of the Council are education of employer, employee, and the public in the ways and means of preventing loss of life and property, and in preventing suffering and destitution from injuries at work, on the highways, in the home, and in school. It is a non-profit, education organization supported by membership dues and the sale of publications and other safety materials.

Although it was started in this country, largely by U. S. businessmen, the idea of a safety council for Latin America quickly caught on. Soon associated councils and safety committees were formed in Argentina, Brazil, Cuba, Mexico, Chile, Columbia,

INTER-AMERICAN'S 12-POINT SERVICE PROGRAM

1. Engineering consulting services.
2. Safety awards for achievements.
3. "Noticias de Seguridad," the safety magazine of Latin America.
4. "El Supervisor de Seguridad," a safety magazine for supervisors.
5. Safe practices pamphlets and data sheets.
6. Safety posters.
7. Safety reference library.
8. Safety films.
9. Safety calendars.
10. Safety instruction cards in Spanish.
11. Safety reference materials in Spanish.
12. Cooperation with national and local efforts.

Costa Rica, Guatemala, Peru, Panama, Puerto Rico, and Venezuela.

The Council has been able to greatly enhance the effectiveness of its efforts through these local organizations which have adopted the aims and goals of the Council

and have done much to further these objectives in their local areas.

The first Chapter of Inter-American was formed last January at a meeting in San Juan, Puerto Rico, the first ever held outside continental United States.

The group, known as Inter-American Safety Council—Puerto Rico Chapter, named Sr. Carlos Regenass, general manager of Porto Rico Gas and Coke Company, as president.

Other officers are Vice-President — Isidro Quiñones Vidal, treasurer, Eastern Sugar Associates; Secretary—Maria Socorro Lacot, general supervisor of Home Economics, Division of Vocational Education, Department of Public Education; Treasurer—José Miguel Peña, public accountant, Puerto Rico Drydock & Marine Terminal.

Directors include Candido Fernandez, general supervisor, Personnel Division, Empress Ferre; Salvador Padilla Escobi, traffic engineer, Department of Public Works; Prudencio Rivera Martinez, public relations officer, Fondo de Seguridad del Estado, and Col. Harold F. Parkhurst, engineer and safety consultant.

The Chapter operates under the same constitution and by-laws as Inter-American Safety Council.

During the 18 years since its founding, much has been accomplished toward realizing the aims of the Council. The organization and its members have pioneered safety in Central and South America and have brought the humanitarian and economic benefits of accident prevention to many individuals, institutions, companies, and industries that otherwise might never have achieved them. Great stimulation has been given to safety work in the individual countries of Latin America, and



OFFICERS AND DIRECTORS of Inter-American Safety Council for 1956. Seated: R. V. Sear, vice-president J. W. Mather, managing director W. T. Rogers, past president W. G. Legge, president F. B. Griswold, treasurer S. D. Montgomery, and vice-president W. A. Cutter. Standing: A. R. Merz, A. J. Saridaki, vice-president J. D. Long, J. C. Kemp, H. E. Redenbaugh, W. J. Carson, R. L. Cole, and J. G. Sealy.

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POSTER supplied by the Inter-American Safety Council.

most of the larger industries hold Council memberships.

In testimony of the achievements and progress made in accident prevention since the Council began operations, 198 plaques have been awarded to industrial organizations in Latin America for outstanding achievements in safety. In the transportation field, 275 safety awards have been presented to aviation companies during the past eighteen years for excellence in safety. In addition, 45 gold medals and achievement certificates have been presented to individuals for saving human lives through prompt application of artificial respiration and other first-aid measures.

These awards not only serve to recognize outstanding achievement in accident prevention work but also to provide incentive for even greater accomplishments in the field of safety. Companies receiving the awards take great pride in their achievements. They publicize the awards widely and celebrate the presentations with an enthusiasm seldom exhibited in the United States.

The aim of Council founders was to coordinate and disseminate throughout all of Latin America the methods and means of preserving life, limb, and property through safe practices. This aim remains unchanged; it is the paramount consideration of the Council. The scope is broad, the purpose humanitarian, the result of economic and social value.

Though small in size compared with National Safety Council and a few other councils in this country, Inter-American has nearly 200 members in 24 countries. Most are industrial organizations with anywhere from a dozen to more than 17,000 employees.

Prominent organizations and firms holding membership in the Council include: American Airlines, Inc.; American & Foreign Power Corp.; American International Underwriters Corp.; American Optical Co.; Braniff International Airways; National Portland Cement Co.; Cerro de Pasco Corp.; Creole Petroleum Corp.; Esso Standard Oil Co.; General Electric Co.; International General Electric Co.; Moore-McCormack Lines; International Business Machine Corp.; International Petroleum Co.; Pan-American World Airways System; Phillips Oil Co.; Pyrene Manufacturing Co.; Shell Caribbean Petroleum Co.; Sinclair Oil & Refining Co.; Texas Petroleum Co.; U. S. Rubber Export Co., Ltd.; Vanadium Corp. of America; Westinghouse International Corp., W. R. Grace & Co., and many others.

A time-tested, 12-point program, described in the box elsewhere in this article, has been developed to fulfill the specific safety needs of Latin America. As in the early days of National Safety Council, Inter-American has thus far concentrated on de-



MONTHLY safety magazine, "Noticias de Seguridad."



AVIATION certificate awarded by the Inter-American Safety Council.

velopment of safety programs for industry; however, some work has been done in traffic, off-the-job, and other safety fields. Additional activities will be initiated along these lines as the financial ability of the Council increases.

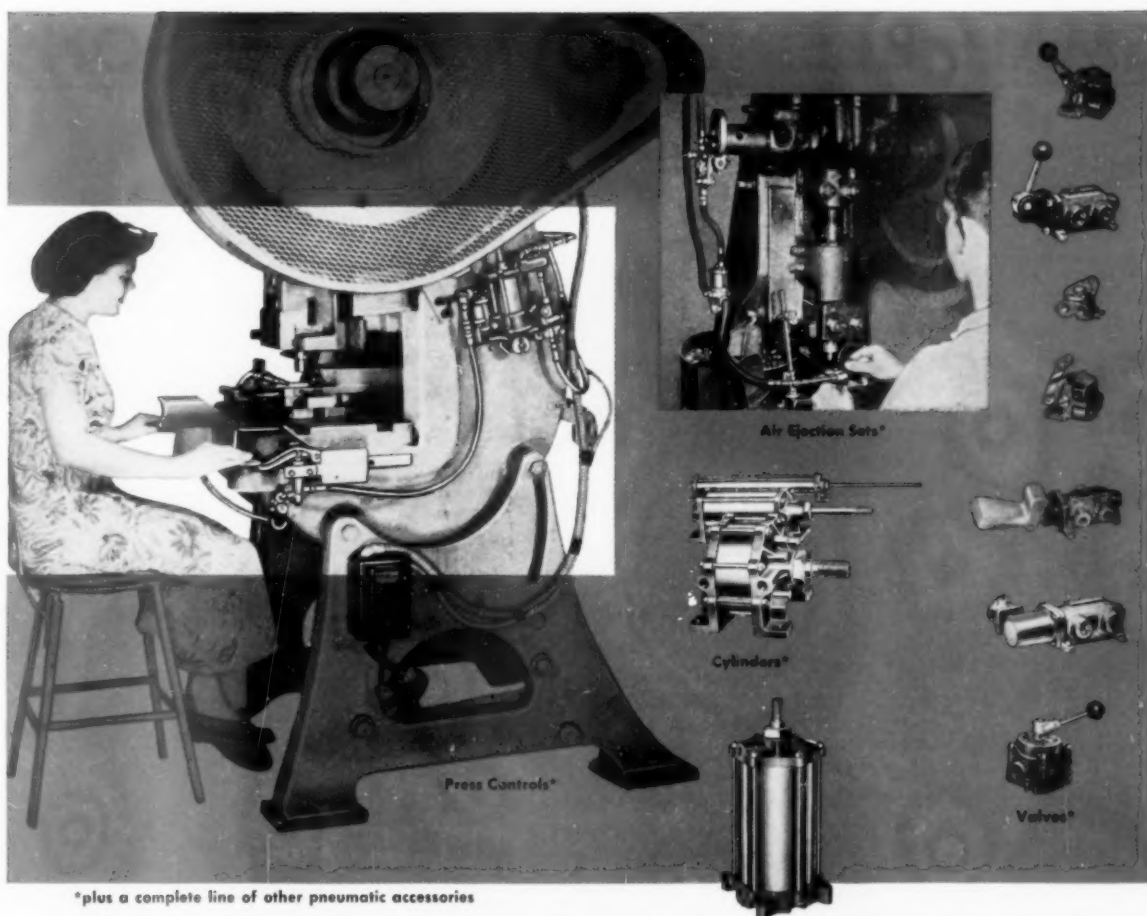
It should be said, and with great appreciation, that the progress of Inter-American could not have been made without the assistance of National Safety Council. Both councils work under an agreement whereby NSC grants Inter-American reproduction rights and access to materials for translation and helps Inter-American in other ways.

In turn, Inter-American assists NSC in providing services for members with Latin American operations. Ned H. Dearborn, president of National Safety Council, is a member of the board of directors of Inter-American, and Walter Legge, immediate past president of Inter-American, is a director of National.

Much credit for amicable and helpful relations between the two councils should be given to W. G. Johnson and his staff at NSC who are always willing to lend a friendly hand—beyond the call of duty.

Inter-American officers for the present term include: President—F. B. Griswold, vice-president, Lehigh Safety Shoe Co.; Vice-presidents—Dr. John D. Long, head of Refinery Division, Creole

—To page 170



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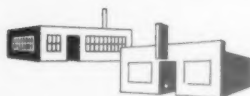
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Company _____

Address _____

SMALL BUSINESS and ASSOCIATIONS



By A. M. Baltzer and Robert D. Currie

Small Business Program Staff, National Safety Council

Associations Are the Key

The Industrial Indemnity Company, San Francisco, firmly believes that trade associations offer an excellent medium for distributing safety material to small employers. Thomas Soule, chief safety engineer, points out that in California, 85 per cent of all employers employ less than 10 persons.

He adds that since 90 per cent of all mercantile establishments are "small," the insurance producer is in the best position to influence the small businessman and to help distribute safety material. His emphasis on the trades and services aspect of the small business problem ties in with our thinking and supports the recent formation of the Council's new Trades and Services Section.

The Industrial Indemnity Company has developed a series of inexpensive employee leaflets which are widely distributed by trade associations through restaurants, service stations, retail stores, etc. Obviously, much of this material reaches employers not insured by the company, but the over-all effect has proved worth while.

High Cost of Accidents

The American Paper and Pulp Association has done an outstanding job of collecting case histories and statistics, particularly on unusual accidents. The subsequent analysis and distribution of ideas for preventing recurrences meets the highest standards of exchange of information through a trade association. This recent release is an outstanding example.

George Johnson, secretary for the APPA safety subcommittee, recently summarized for members the survey on the single, most costly accident in each of 124 mills during a five-year period. His report brought out these facts:

- The average cost of each of the 124 accidents was over \$10,000.
- One injury cost almost \$68,000; another permanent disability cost \$65,000; only six cost less than \$1,000.
- One-third of these serious injuries occurred in the machine room or on machines (the Association has been giving special attention to machine room accidents).

Mr. Johnson points out that the cost of \$1,280,000 is not the total cost of all serious injuries; some mills might have had many injuries more serious than the most serious one reported by other mills.

However, the survey brings out the fact that practically all the mills had at least one very serious injury between 1950 and 1954—ample reason to participate wholeheartedly in the Association's program. More work of this type is needed to make all of us more aware of the fact that accident prevention is an increasingly important job.

PRESSED METAL INSTITUTE	
EMPLOYEES	FREQUENCY RATE
1-74	344
75-249	197
MORE THAN 250	99
ALL MEMBERS	122

THE PRESSED Metal Institute, like so many other associations, finds that the highest disabling injury frequency rates come from the smaller firms. Here is how the frequency rate varies for three size groups of companies in the institute.

More Safety for Loggers

The Pacific Northwest Loggers Association members were commended by the Association's safety committee chairman for their improvement in injury frequency rate reduction. The disabling injury frequency rate was reduced from 111.03 in 1950 to 68.38 in 1954, a 38 per cent reduction in four years.

Preventing accidents was stressed by two speakers during the annual meeting. There appears to be no letup in the Association's safety activity.

In recent months the Pacific Northwest Loggers Association and the Western Pine Association collaborated with the National Safety Council in distributing the Council's logging posters to members of each association. This type of cooperation provides a real service for association members. The NSC is ready to help any association on any similar project.

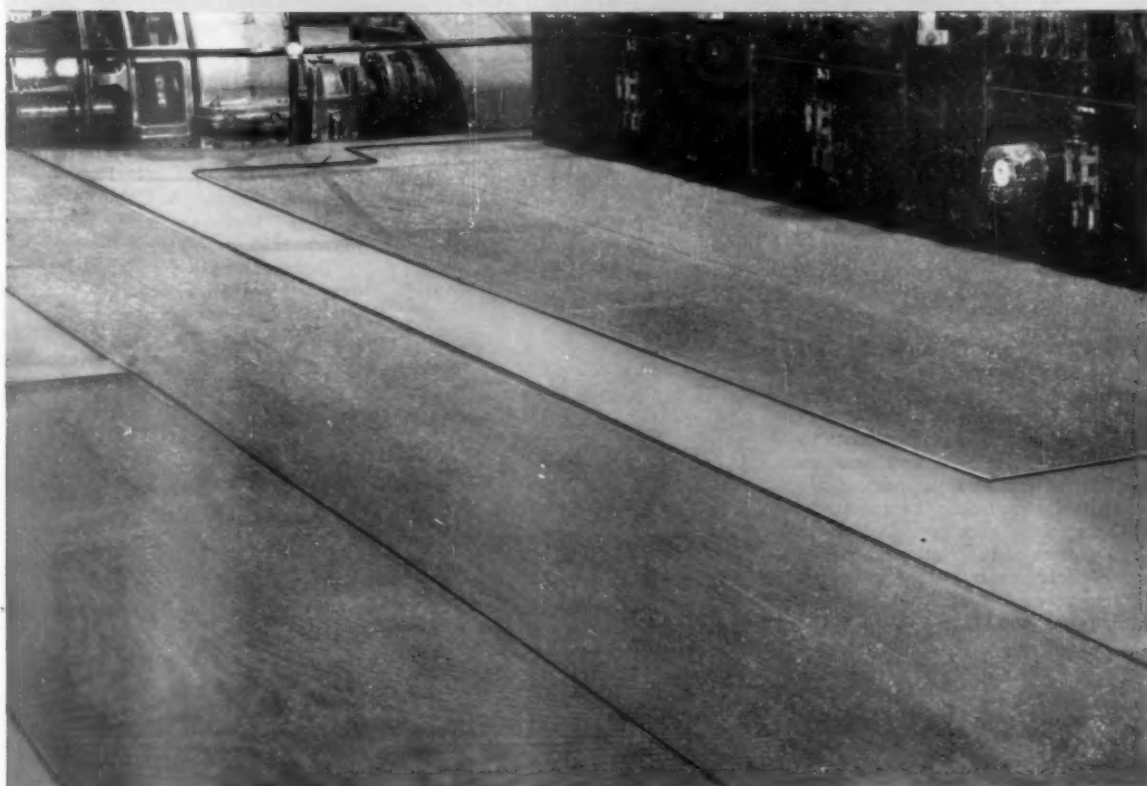
This Is No Success Story

A large firm is more likely to be in a position to replace a key man on the production line. Here is a story where the key man was indispensable to production.

The top tool and die man in a relatively small machine shop accidentally amputated his finger on a grinding wheel operation. It was bad enough for this company to have its best tool and die man away from work for nearly a month, but in addition, it was forced to give up a contract worth more than \$12,000 because the injured man was the only one on the staff with the skill and experience necessary to handle the exacting requirements that were specified in the contract.

This is another example why preventing accidents is so important, particularly to smaller firms.

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Compiled by Ruth Parks, Librarian, NSC

First of Five Volumes of Toxicology Handbook

Handbook of Toxicology, Volume I, edited by William S. Spector. W. B. Saunders Co., Philadelphia and London, 1956, 408 pages, \$7.00.

Handbook of Toxicology, Volume I, is the first of a proposed five volumes dealing with all known phases of toxicology. The first volume contains two tables. Table I covers lethal doses of solid and liquid compounds on laboratory animals for 2,120 compounds.

Table II covers lethal concentrations of gases, vapors, and fumes in respired air on laboratory animals for 243 materials. It is indexed alphabetically according to compounds.

These tables were prepared under the auspices of the National Academy of Sciences by the Wright Air Development Center. The principal contributor was W. S. Von Oettingen, M.D., Ph.D., chief toxicologist, the National Institute of Health, Bethesda, Md.

K. A. KELSEN

BOOKS AND PAMPHLETS

Chemical Industry

Marking Techniques. A Guide to Methods of Marking Containers of Hazardous Chemicals. Association of British Chemical Manufacturers, 86 Strand, London, W.C. 2, England. 1956. 34 p.

Fire Protection

Fire and Explosion Hazards in Thermal Coal-Drying Plants. U. S. Bureau of Mines. 1956. 20 p. Report of Investigation 5198. Free. Available from the Bureau, Publication Distribution Section, 4800 Forbes St., Pittsburgh 13, Pa.

Health

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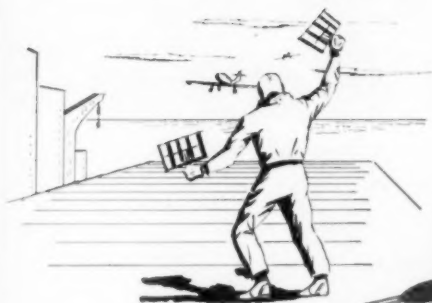
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S-4114. **Flight-Deck Boot.**
Chukka style. Non-slip
Tri-Vac soles and heels.
Flexible leather insoles.
Leather-lined steel toe boxes.

Thom McAn welcomes aboard another new safety shoe—the Flight-Deck Boot!

FROM THE STORM-TOSSED decks of aircraft carriers—where flight deck personnel gamble their lives on the grip of their shoes—comes the design for this new Thom McAn safety shoe.

Thom McAn's Flight-Deck Boot has every feature that made the Navy shoe so successful.

You get Tri-Vac soles and heels that grip icy, wet and treacherous surfaces with dozens of tiny suction cups... high leather sides for firm support and comfort... *plus* the added protection of Thom McAn's leather-lined steel toe boxes.

Add to these exclusive features Thom McAn's sturdy, long-wearing leather, traditional craftsmanship and famous money-saving prices. You get them all with Thom McAn's new Flight-Deck Boot. Small wonder Thom McAn's so good it's the best-selling shoe in all America.

SOLD TWO WAYS: 1. At Thom McAn Stores. 2. Direct to your plant. Send today for details of our money-saving plant-sale plan and Thom McAn's 4-way employee purchase plan—plus descriptions of the Thom McAn Safety Shoe line. Write: Thom McAn Safety Division, 25 West 43rd Street, New York 36, N. Y.

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Thom McAn
SAFETY SHOES

A Division of the Melville Shoe Corporation

The Works Manager

Expects More in '56

Human relations is the safety supervisor's most critical job factor. The success of his program depends on confidence, cooperation, and understanding on all levels

By G. L. HOLT

AT THE 1951 All ACF Safety Conference a speaker described in one word what the local plant management expects of the safety supervisor: *results*. Now, four years later, I would use two words: *greater results*.

It is a fundamental law of management that maximum productivity depends on the reduction of accidents to an irreducible minimum. Few, if any, of the laws of management in manufacturing have such a possibility of a high percentage of application as this law of safety. Mature judgment indicates that:

- 98 per cent of all accidents are preventable.
- 88 per cent of the causes of all accidents are supervisory and 10 per cent are physical (both within the power of the employer and the employee to remedy).

The rapid development of new technological approaches to all phases of management presents a stern challenge to the safety supervisor just as it does to all levels of management, and maximum productivity can be sidetracked or delayed—in spite of new methods, techniques, and equipment—if the management law of safety does not keep pace with the modern thinking so necessary for us

to retain and improve our company's position in industry.

The safety supervisor must be a leader. Shakespeare once wrote that "some are born great, some achieve greatness, and some have greatness thrust upon them." So it is with leadership. Some men are born with a capacity for leadership and some acquire the art of watching and studying the actions of those around them. Others find themselves thrown into unusual situations which require them to draw on resources they never realized they had, and subsequent events then bring out marked leadership. Most of us are not born leaders.

Many times we see a workman go out of his way to do things for certain supervisors, including our safety supervisors. We see them carry out instructions cheerfully and competently, or we might see them add something to the performance of the job beyond what may be termed "the line of duty." They put themselves into the job and give it that "plus effort" which one gives only when he feels that he is a part of the team, and that his contribution is understood and appreciated.

This represents something that is built on a man-to-man relationship. It is a reflection of a man's attitude toward his job, his supervisor, and his company. It has been developed over a period of time as a result of three simple elements: confidence, cooperation, and understanding.

In such a situation we say that morale is high, a short, simple way of saying that men are inter-

ested in their jobs, that they feel the company is a good place to work, and that their supervision understands them, appreciates their efforts, and tries to give them all a square deal.

The type of leadership which our safety supervisors must develop and project in their daily activities is the ability to get other people to work willingly through the leader's influence or example. That type of leadership has to do with the art of dealing with persons, of knowing how to reach the traits which move people to put forth their best efforts.

Upon the safety supervisor's shoulders rests the prime responsibility for directing both supervisory and hourly personnel in adherence to the safety rules and regulations. He must, therefore, re-educate all personnel on fundamental safety principles, be tough about safety rules, and keep more alert to detect hazards in every department.

For the safety supervisor to do the job expected of him in 1956 the safety supervisor must learn to put himself in the other fellow's place. Approaching the subject from that angle, the safety supervisor will agree that the following are some of the things expected of him by the men and women employed in his plant:

1. That the safety supervisor know his job.
2. That courteous and consistent treatment be the rule rather than the exception.
3. That the safety supervisor furnish the necessary instructions, material, and

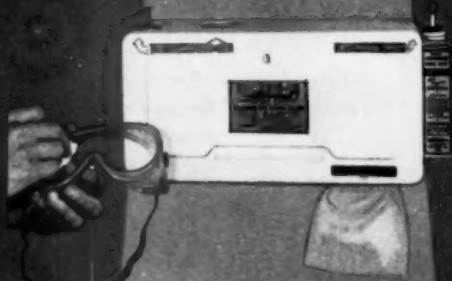
—To page 153

G. L. HOLT is Works Manager, American Car & Foundry Division of ACF Industries, Inc., Berwick Plant, Berwick, Pa. This article has been condensed from an address delivered at the Ninth Annual All ACF Safety Conference, Chicago, October, 1955.

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AROUND THE COMPASS

ACTIVITIES • PROGRAMS • EVENTS

Compiled by Field Service Department, NSC



Northern Indiana Safety Conference

The 13th Annual Northern Indiana Safety Conference and Exposition sponsored by the Industrial Safety Committee, Chamber of Commerce Safety Council, Fort Wayne, Ind., was held April 10 and 11. Highlights of the well-attended program were outstanding luncheon and dinner speeches by J. L. Ridinger, director, Safety and Plant Production, Inland Steel Company, East Chicago, Ind.; Ernest H. Reed, manager, Education and Personnel Department, International Harvester Company, Chicago, and Frank A. Jessup, superintendent, Indiana State Police, Indianapolis, Ind.

At the Conference luncheon, April 11, the Industrial Safety Committee of the Chamber of Commerce Safety Council was presented the Indiana Highway Safety Citation for an outstanding, cooperative, off-the-job effort to curtail employee absenteeism by reducing traffic accidents through safety education. The President's Medal of the National Safety Council (for lifesaving) was presented to Edwin E. Allen of Columbia City, Ind. "Wise Owl" awards were presented by John V. Carton, General Chairman of the Safety Council, to industrial workers of Fort Wayne industry who have guarded their eyesight during the past year by wearing protective equipment.

Successful California Congress

The Fourth Annual Eastbay Public Safety Congress held in Berkeley, Calif., March 9, at the Hotel Claremont, was attended by approximately 600 persons. Sectional meetings included traffic, motor transportation, industrial, school, home, and public service.

This year, for the first time, the annual awards dinner of the Green Cross Business and Industrial Safety Contest was held in conjunction with the Public Safety Congress. The dinner, sponsored by the Eastbay Chapter, NSC, and the Northern California Industrial Safety Society, honored award winners for 1955. T. G. McGuire, president, Industrial Indemnity Company, was principal speaker.

Pennsylvania Conference Features 20 Sessions

The 29th Annual Eastern Pennsylvania Safety Conference will be held May 7-9 in the three participating cities of Bethlehem, Allentown and Easton. This year's program will feature 20 sessions with over 60 speakers, a new record for the Conference. Industrial group sessions, always a highlight of the Conference, include public utilities, process industries, foundries and machine shops, fabricators, mercantile, and a cement session which is new to the Conference.

In addition to the strong industrial program, there will be sessions on home, school, fleet, farm, and other phases of safety. The Industrial Nurse session will be a continuation of the women's luncheon this year.

Safety for small business will hold an important spot in the program. Secretary-treasurer Harold A. Seward anticipates a record attendance.

Clean Windshields in Michigan

The Michigan Petroleum Industry launched a state wide traffic safety program, with "Slow Down When It's Dark" as its theme during February. Thousands of service stations throughout Michi-

gan distributed special windshield towels with safety messages printed on the surface. A second phase of the program will commence June 4 and continue through July 15 with "Watch Out For Kids" as its theme.

Omaha Safety Council Industrial Safety Course

The 1956 Industrial Safety Course offered by the Omaha Safety Council commenced April 17, and is scheduled for each Tuesday through May 8. Subjects to be covered during the course include plant housekeeping, fire prevention, materials handling and storage, hand tool safety, personal protective equipment, first aid, falls, and your responsibility in safety.

Lilac Time Is Conference Time

Visit Rochester in "Lilac Time" is the invitation extended for the Genesee Valley Safety Conference and Exposition sponsored by the Rochester Safety Council, Genesee Valley Chapter, ASSE, and the Industrial Management Council of Rochester, N. Y., May 22-24.

Heading the list of more than 75 specialists slated to speak on various aspects of safety is Roland P. Blake, Bethesda, Md., a pioneer in the American safety movement. He is author of the book, "Industrial Safety," recognized as one of the two leading texts on the subject. Edward B. Landry, national president of the American Society of Safety Engineers, Washington, D. C., will be the featured speaker at a safety engineers' luncheon.

More than 20 specialized industrial programs will cover material handling, machine shop, electrical, chemical, plant sanitation, fire protection, construction, public

Workmen in Bare Feet!

ridiculous yes, . . . but shoes without safety steel toes can be just as risky

Today you can select safety shoes for your workers ranging from the finest dress oxfords to heavy duty work boots . . . all having the maximum steel toe protection afforded by the new improved WINGUARD steel toes.



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- 9 The AIR-PAK is all-purpose equipment, not just rescue apparatus.
- 10 Economical. Operates for as little as 50¢ per hour. There is no wasted air. Remaining supply may be saved for next time.
- 11 The AIR-PAK is completely independent of surroundings — safe in any atmosphere, in any concentration.
- 12 Proven. Thousands in use by industry and the fire services throughout the world.

Vision Unlimited

New Scottoramic Face Mask now available for all Scott equipment, (standard on most models), and for replacement on your present breathing apparatus.



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utilities, industrial medicine, and industrial nursing.

Other sessions will include home and school safety, commercial vehicle, small plant safety, traffic and public safety. The Exposition will offer many new exhibits this year, and William H. Keeler, secretary-treasurer of the Conference, is expecting a record turnout.

Special ladies' entertainment including a tour of the city and its parks, a fashion show, photography and art exhibit, and a luncheon have been arranged for delegates' wives.

Billion M-H Record

Three hundred-eighty-four companies with half a million employees who worked over a million man hours in 1955 participated in the Business and Industrial Contest of the Greater Los Angeles Chapter, NSC. The growth of the contest during the past few years has been remarkable. The 1955 contest awards were presented March 21 at a dinner during the third Annual California Safety Congress held at the Ambassador Hotel, Los Angeles. Sixty companies completed the contest year without a single disabling injury and in 38 different divisions and groups the accident frequency rate was lower than the national average for the same type operation.

More than a thousand persons attended the Seventh Annual Business and Industry Safety Award Dinner, at which time Senior and Junior "Sweepstakes Awards" were presented. David L. Arm, manager, Industrial Department, National Safety Council, was principal speaker. The "Sweepstakes Awards" are the Chapter's highest industrial awards.

3,000 Attend California Congress

Attendance at the Third Annual California Safety Congress and Exhibit, March 19-21, in Los Angeles, attracted 3,000 delegates representing business and industry throughout the 11 western states. One hundred and three exhibits were displayed in the new salon at the Ambassador Hotel.

These were the first exhibits in the new setup. The morning panel subjects, "Let Your Relations Pay" and "Are You Reaching the Second Plateau?" were repeated each day in order to accommodate all who wished to attend. Different speakers appeared each day. Afternoon sessions were divided into management clinics, safety engineer sessions, and foremen's panels.

New York Convention Draws Big Crowds

The 26th Annual Safety Convention and Exposition of the Greater New York Safety Council, held at Hotel Statler in that city April 16-20, attracted capacity audiences at nearly all of the sessions.

In addition to the many occupational programs covering various phases of industrial safety, several programs of timely interest were featured, including one on "Disaster Control."

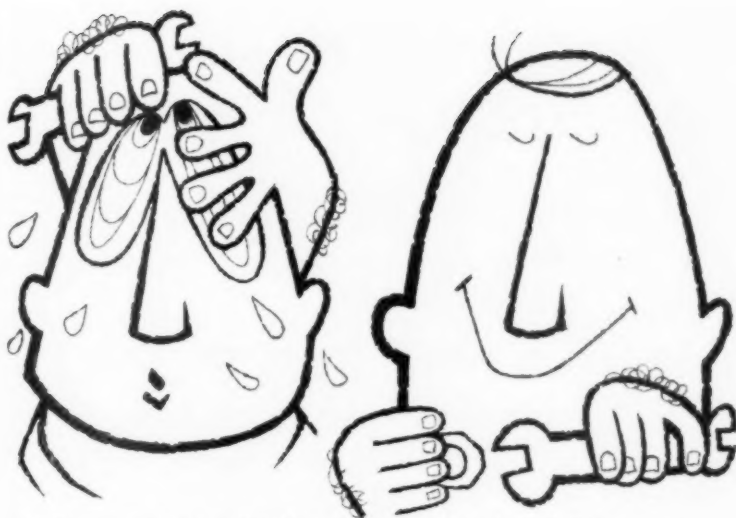
Another session of more than usual interest was a "Conference of Chief Executives," at which admittance was by advance invitation only. A group of nationally-known industrialists were invited to discuss the accident problem from the viewpoint of top management, analyzing both the economic and social aspects of the problem as they affect production.

Other special programs included sessions on head, eye and body protection: the noise hazard in industry; safety in foremanship; shipbuilding; stevedoring, and aviation plant safety. The five-day program covered traffic safety and home and school, as well as occupational safety.

Gross to Head Berkeley Green Cross Drive

Milton E. Gross, Berkeley manager of Pacific Gas & Electric, has been named chairman of the 1956 Green Cross membership appeal in Berkeley, Calif.

The Spring campaign will provide funds for the safety program of the Berkeley-Albany Green Cross, local division of the Eastbay Chapter, NSC. Mr. Gross, active in local civic affairs, said after his appointment, "Berkeley —To page 172



Collins never took salt tablets—
He said they made him sick!

But look at Collins now—
Morton "Yellows" did the trick!

Take salt tablets without feeling ill



Complies with Federal Specifications SS-S-31e for Type III, Class C Impregnated Salt Tablets.
U. S. Patent No. 2,665,236
Patented 1954 (Canada)
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You and your employees will like Morton Yellow Impregnated Salt Tablets. These are non-sickening salt tablets made by a special patented process that uniformly coats the individual salt crystals to control the dissolving rate of the tablet. A controlled dissolving rate means that salt lost through sweating is replaced gradually—but beginning immediately.

Salt lost through perspiration should be replaced to prevent Heat Fatigue. Workers will feel better and work better when they take Morton Yellow Impregnated Salt Tablets—and remember, they do not cause stomach upset.

Morton Yellow Impregnated Salt Tablets come in a handy Disposable Dispenser. A plastic dispenser and a new golden heavy duty dispenser are also available, as are plain salt tablets.

Mail coupon today for more information!

MORTON SALT COMPANY

Dept. NS-5, 120 South LaSalle Street, Chicago 3, Illinois

Please send me your booklet which gives complete information about the Morton line of salt tablets and dispensers.

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Company _____
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Goggles Are a Personal Item

The job has become easier and safer thanks to corrective safety glasses and modern science

By HARRY G. BEILING, O.D.

HOW THE safety glasses fit may be the key to a major problem of eye safety—why safety glasses are worn in the pocket.

"Your vision is as personal as your fingerprints," according to the American Optometric Association, which has made a study of eye accident cases. In plant after plant it was found that more personal attention to fitting led to near perfect records of wear when needed.

The conclusion of vision specialists and safety directors after careful study was, "If they fit him, he will wear them."

Even with plain lenses, discomfort can come from a variety of fitting failures. Do the glasses rest properly on the nose? Are the temples properly bent at the sides of the head and back of the ears? Do the lens centers match pupil centers? Are lenses kept clean? Maybe the color or esthetic appearance of frames is a psychological factor. The fitting problems should be worked out in detail with the examiner.

Periodic checkups are important. Maybe vision has changed as it does for everyone, especially those over 40. Corrective lenses may be needed, or a different correction from the one prescribed a year or more ago. If so, present goggles may be unsatisfactory.

Requirements for corrective-protective goggles depend not only on the employee's vision but also on his job—the visual demands and the hazards of it.

DR. HARRY G. BEILING is Chairman, Occupational Vision Committee, American Optometric Association.

What is the working distance: 8, 16, or 30 inches, or 20 feet? For corrective lenses in safety goggles this is a crucial question. Maybe bifocals or trifocals are needed to adapt vision to more than one critical working distance. Here one of the most common mistakes is to assume that the prescription for reading glasses may be satisfactory for the job. Reading glasses can make a safe crane operator dangerous, and they may be near worthless to anyone working on fine details at 8 or 10 inches.

Just as in picture taking, a lens that sharpens focus at 16 inches blurs focus at about 30 inches or any greater distance, and vice versa. Each lens, then, must fit the refractive requirements of the eye and the visual requirements of the job.

What is the position of the task—eye level, high, low, right or left?

Usually the close range segment of bifocals is at the bottom. If the critical visual task is above eye level, it should be at the top to avoid strain and fatigue. Unless seeing is easy and comfortable with safety glasses, they are likely to be removed.

Does the frame interfere with peripheral vision—to the sides, up or down? If it does, the wearer may unconsciously feel safer or more comfortable without safety glasses. Better fitting is the answer.

What are the hazards of the job? Flying particles, as in metal working plants, are the most common hazards. Heat-toughened lenses that will not shatter pro-



tect the eyes from this hazard. If considerable visual correction is required to see well, hardened lenses may be too heavy for comfort. Lighter plastic lenses may solve that problem.

Harmful light, such as from welding, is screened out by a wide

—To page 118



COOL HEADS IN "HOT SPOTS" WON'T LET YOU DOWN

On jobs where the air is foul or hot, men can't be blamed too much for letting up now and then. If you want to keep their efficiency and morale high, feed them better air.

Employers have learned the value of putting Coppus Blowers and Ventilators on the job . . . in confined areas and near furnaces or hot processes. The men work faster, do better work, work longer without fatigue — and appreciate the more comfortable working conditions.

Give some thought now to the "hot spots" in your plant. There is a

Coppus Blower for practically any requirement — Cable Manhole and Tank Ventilators, Boiler Manhole Blowers and Exhausts, Heat Killers, Shiphold Ventilators, etc. The Coppus "Blue Ribbon" is your assurance of design and construction planned for plenty of severe service. Check and mail the coupon for specific information. Coppus Engineering Corp., Worcester 2, Mass. Sales Offices in THOMAS' REGISTER. Other "Blue Ribbon" Products in BEST'S SAFETY DIRECTORY, CHEMICAL ENGINEERING CATALOG, REFINERY CATALOG.



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Please send me information on the Blowers that clear the air for action.

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| <input type="checkbox"/> in tanks, tank cars, drums, etc. | <input type="checkbox"/> on steam-heated rubber processes. | <input type="checkbox"/> general man cooling. |
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| <input type="checkbox"/> on coke ovens. | <input type="checkbox"/> motors, generators, switchboards. | <input type="checkbox"/> stirring up stagnant air wherever men are working or material is drying. |
| | <input type="checkbox"/> wires and sheets. | |

NAME.....

COMPANY.....

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CITY.....

(Write here any special ventilating problem you may have.)

SHOWMANSHIP IN SAFETY

By Neil Kinney, Industrial Department, NSC



Robert Kunde Wins Award for April

Whirlpool-Seeger's (St. Joseph Division) safety director, Robert Kunde, takes his place on the winner's roster to become the third Showman-of-the-Month. Mr. Kunde's entry, "High Man On The Totem Pole," (April NSN) brought him a Ronson Adonis lighter.

Each month we will award a handsome Ronson lighter for the best safety promotion idea submitted. Just send us a description, with pictures, of the way you pep up employee interest in safety. Contests, stunts, incentives of any kind are eligible.

If your idea wins one of our monthly awards, you become eligible, automatically, for our "Safety Showman of the Year" award. The year's best entry will win a Parker "Magnetix" desk set with two "51" pens.

Send your entry to Neil Kinney, Showmanship in Safety, NATIONAL SAFETY NEWS, 425 N. Michigan Ave., Chicago 11.

Awards Bolster Safety Interest

We have permission to steal a few lines from "Sammy Safety's Notebook" (appearing elsewhere in this issue) to point up the value of awards and presentations. A cable-handling device developed by A. V. Alexander and Lynn Parker of Lehigh Portland Cement Company, Iola, Kan., appeared in Sammy's Notebook in February. The idea was a prize-winner and we have received news from W. A. Viebrock, plant manager, that the awards have been presented to the winners at a regular safety meeting on March 22.

Presentations such as this bring safety to the attention of many and offer a fine opportunity for

safety men to publicize their programs and capitalize on the positive interest in the awards.

Mystery Box Contest

Last October a mysterious sealed box captured the interest of Dominion Iron and Steel, Ltd. (Sydney, Nova Scotia) employees and became the subject of some valuable publicity in connection with a "No-Accident Month" campaign sponsored by the Nova Scotia Accident Prevention Association.

A list of 33 items available in Dominion's safety stores was published and distributed to employees. The box shown in the accompanying illustration contained 10 of those items. The three employees guessing nearest to the actual contents of the box became eligible for \$25, \$15, and \$10 prizes. The only person who knew what the box contained was

J. J. Holmes, safety department superintendent.

Mr. Holmes states, "I personally selected the 10 items and no one knew what was in it except myself. In making my selection from the list of 33 items, I went from the head to the feet for eight of the more commonly used items of personal protective equipment. For publicity representation I selected the NATIONAL SAFETY NEWS and for general safety guidance I chose our plant safety rules."

At the close of the contest, a sealed, certified list of the 10 items was opened and winners were determined. The first place winner had seven items correct. Second and third place winners each had six items correct and their prizes were judged by the one having the list nearest the sequence of the certified list. The list follows:



G. T. THEUERKAUF, safety inspector (left), and J. J. Holmes, safety department superintendent, with Dominion Iron and Steel's mystery box.

★ ★ ★
FLASH

SPEEDI-DRI SPOTLIGHT

★ ★ ★
FLASH

A REPORT TO MANAGEMENT ON INDUSTRIAL SAFETY

VOL. II

MAY, 1956

NO. 2

Sol-Speedi-Dri Now Flecked with Green

OUT OUR WAY

BY J. R. WILLIAMS



KEEP SAFETY STANDARDS UP, COSTS DOWN • HERE'S HOW

Price is an important factor in your choice of a mineral floor absorbent—but, obviously, not the *only* consideration. Here are some other things to weigh before making your selection:

ABSORPTION

Does the material thoroughly absorb and retain oil and grease deposits—keep floors slipproof underfoot? If not, it means more frequent application, requiring more material and manpower. And what price do you put on a crippling injury caused by a slip or fall?

VOLUME WEIGHT

The more volume you get per pound of absorbent, the more coverage you get (a pound of feathers

spreads farther than a pound of sand)—which means larger, safer working areas for employees.

UNIFORMITY

Do you get uniform volume weight and efficiency—bag after bag, all year long? You're paying a uniform price.

ABRASIVENESS

Is the material gritty and abrasive to the extent it could damage working parts of machinery?

DUST

Does the absorbent create dust when applied or when subjected to heavy traffic? A dusty absorbent causes serious safety and maintenance problems—affects efficiency and morale of workers.

Judge Sol-Speedi-Dri by these factors—and you can't logically use any other mineral absorbent!

Top-Selling Oil and Grease Absorbent Has New "Trademarking," New Performance Qualities

Beginning with shipments from our plant in mid-April, industrial safety men can be sure they're getting the "finest of oil and grease absorbents" for their plant floors. For Sol-Speedi-Dri—long the answer to that description—now has a *new look*. Scattered through each bagful are granules of pure Sol-Speedi-Dri colored green by a new process. These green flecks have been developed for your protection. They're a trademark that clearly identifies double S-d quality—and none other!



VASTLY IMPROVED PRODUCT

Green-flecked Sol-Speedi-Dri is new in more ways than one. Speedi-Dri Corporation's research laboratories have made dramatic improvements in basic double S-d properties—improvements that mean greater safety underfoot, more efficiency and economy all year round.

MORE SLIP-RESISTANCE

There's no safer mineral absorbent than new Sol-Speedi-Dri. Its harder, thirstier granules soak up oil and grease thoroughly—never leave a slippery "scum" when swept up, never cake or mat down under traffic.

NO DUST HAZARD

Sol-Speedi-Dri is the most dustless

mineral absorbent made. Its granules are de-dusted in production—are completely inert.

NEW LOOK FOR BAG

Green-flecked double S-d is new outwardly, too. Its bag has a brand-new design (see sample version below)—and features two sturdy kraft paper walls, plus a 90-lb. asphalt liner with siftproof seams.

NEW VALUE FOR YOU

Keep your plant floors clean, dry, and safe underfoot with green-flecked Sol-Speedi-Dri—your safest bet for dependable quality!

SEND FOR YOUR FREE SAMPLE

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NEW!



Accoloy X-Weld 125 Chain

Welds as strong
or stronger than
alloy material.
Welded area
2 1/4 times conven-
tional size area.

NEW!



Shaped Section Master Link

Holds its form
under loads up to
18% greater.

NOW—Better and Safer than Ever!

• ACCO Registered Chain Slings—long recognized as the standard of excellence—now give users a double bonus of safety and quality. They incorporate ACCO's new Shaped Section Master Link plus ACCO's sensational Accoloy X-Weld 125 chain.

The new Shaped Section Master Link, without any increase in weight, withstands deformation under loads up to 18% greater than a standard round section can. And the Accoloy X-Weld 125 chain—with its extra-strong, king-size welded area and its non-kinking feature—assures extra ruggedness and better service.

Because of these two spectacular improvements, there is more reason than ever for standardizing on ACCO Registered Slings. For additional interesting information, call your ACCO Registered Distributor—or write our nearest District Office.



American Chain Division AMERICAN CHAIN & CABLE

York, Pa., Atlanta, Boston, Chicago, Denver, Detroit, Houston,
Los Angeles, New York, Philadelphia, Pittsburgh,
Portland, Ore., San Francisco, Bridgeport, Conn.

^{*} Trade Mark Registered

WHAT "ACCO REGISTERED" MEANS . . .

- 1 The best material
- 2 Unit safety factor (on bodies, rings, links, hooks)
- 3 Proof test of complete sling to twice the working load limit
- 4 Actual field service test of each design
- 5 Metal identification ring on each sling
- 6 Signed Registry Certificate with each sling



1. Miner's hat
2. Gas mask canister
3. Flame-proof canvas coat
4. Copy of plant safety rules
5. Pair of safety boots
6. Fume-type respirator
7. Copy of NATIONAL SAFETY NEWS
8. Knee-length leggings
9. Burner's goggles
10. Asbestos mitts.

To gain full benefit from the publicity and promotion, prizes were awarded at a general safety meeting. At least one newspaper picked up the story as an "effective way of attracting attention to safety clothing and equipment."

We were particularly impressed with this short note that appeared in the contest rules:

"This is purely a guessing game, but there is no guessing about safety. You will be 100 per cent right if you don't guess but make sure you are safe and the tools and equipment you work with are in good safe condition.

"It is our desire to go through the month of October without an accident. We need your wholehearted sympathy and cooperation to do it."

Safety "Clock-Watchers"

Employees of the East Bay Municipal Utility District (Oakland, Calif.) know exactly how their



MAN-HOUR odometer designer C. A. Smith points out features of novel "clock" to EBMUD's general manager, J. W. McFarland (center) and Carl Merner, vice-president of the East Bay Chapter, N.S.C.

safety record stands at any hour during the day or night. The "man-hour odometer" in the picture runs continuously, clicking

off the man-hours elapsed since the last lost-time accident.

According to Arthur J. Webb, safety coordinator, "the meter is electrically operated with a small electric motor and wooden gears so that it registers approximately 9,000 hours a day. It runs continuously, seven days a week. The clock is located at the corporation yard where most employees will see it."

The idea for the clock came from EBMUD's planning committee, operating under the general safety committee. The committee meets each year to plan promotion and emphasis programs. C. A. Smith, EBMUD employee, designed and developed the odometer with an assist from general manager J. W. McFarland. As of March 21, time marched on to the extent of 624,936 man-hours without a lost-time accident.

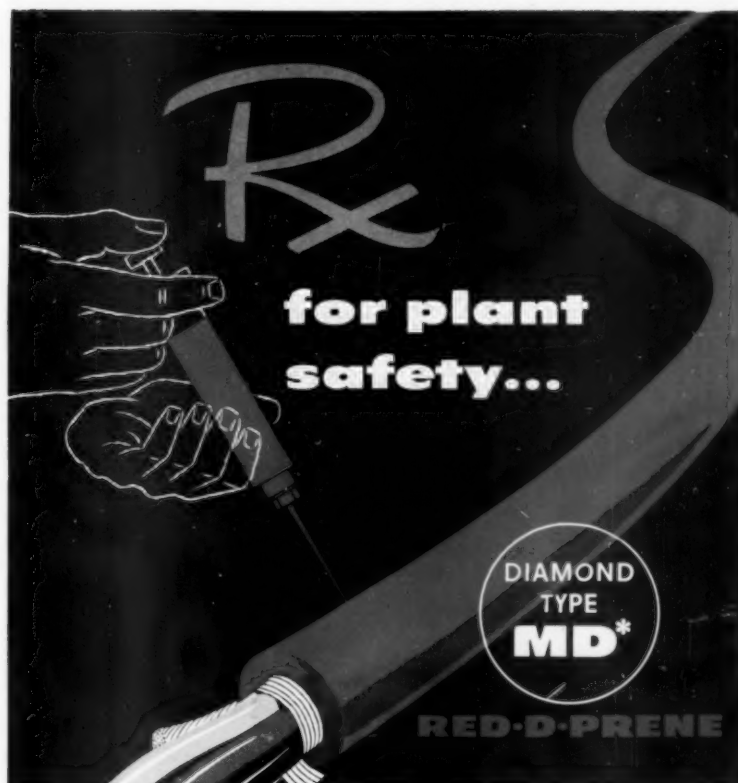
Good publicity? You bet! The *Oakland Tribune* carried an illustrated story on the "clock" on March 1.

Add Mental Health to APHA Program

THE EXECUTIVE BOARD of the American Public Health Association announces that the 84th Annual Meeting of the Association and meetings of 40 related organizations will be held in Convention Hall, Atlantic City, N. J., November 12-16.

The explorations into the important question, "Where Are We Going in Public Health?" which were undertaken at the 83rd Annual Meeting last November, will be continued. The 13 Sections of the Association—Dental Health, Engineering and Sanitation, Epidemiology, Food and Nutrition, Health Officers, Laboratory, Maternal and Child Health, Medical Care, Occupational Health, Public Health Education, Public Health Nursing, School Health, and Statistics—have been augmented this year by a new section on Mental Health.

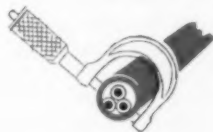
The American Public Health Association with headquarters at 1790 Broadway, New York, is the largest society of professional public health workers in the world, with membership over 12,000. President is Dr. Ira V. Hiscock of Yale University.



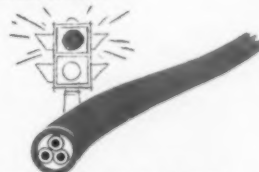
injects color in portable cord to minimize accidents ... cut maintenance costs!

*Mill Duty

Indoors or outdoors...Type MD* RED-D-PRENE carries current wherever you want it, *safely* and at *lower* cost. First designed with tough, oil-resistant Neoprene sheath in Industrial Red...easily seen and recognized by maintenance men. RED-D-PRENE assures long wear, reduces maintenance costs. Means positive identification in your stockroom. Ideal for heavy duty use in Mill and Plant installations.



No flat sides, no off center conditions! Maximum flexibility, moisture resistant.



Industrial Red for high visibility; Insures positive RED-D identification!

Write today for new descriptive brochure and samples.



DIAMOND WIRE & CABLE CO.
SYCAMORE, ILLINOIS



CHICKEN DINNERS for safe workers. These two employees helped establish record of 84 months.



AT END of no-accident month employees throw darts at this wheel while it is spinning. Each segment has some employee's clock number and a dart there means a prize for him. Looking on are Superintendent Melville Combs (center) and Safety Director Everett Pippin, Jr.

A Program for People

In a small plant with many hazardous jobs this safety program has chalked up 84 months without a disabling injury

By EVERETT PIPPIN, JR.

OURS is a job shop, doing steel fabricating and porcelain enameling on steel. Most of our work must be classed as hazardous. We operate many types of punch presses, shears, and high temperature furnaces. Porcelain enamel is glass, and there not only is danger of cuts, but also the ever-present risk that someone will get a piece of hot glass in the eye.

In 1943, we were making incendiary bombs for the Ordnance Department, with approximately 350 employees. That year we hung up a record of the wrong type. We had 73 disabling injuries and 209 doctor cases.

With the same management, safety director, and personnel, we

decided to do something. In 1944 we showed a sharp improvement, with seven disabling injuries and 86 medical cases. Each subsequent year has been better. Our last disabling injury was in January 1949. From 1949 to date we have had only 68 medical cases. During this time we have averaged 125 persons on the job.

We urge our gang to report every injury, and if there is any question in their minds or ours, we send them to the doctor. We are fighting disabling injuries, and yet it is amazing how few cases we have. The conclusion drawn is that our people have acquired the habit of being careful.

We are proud of our record; it stands at 84 consecutive months without a disabling injury, and as of February 1, 1956, 1,779,411 man-hours were worked since the last disabling injury.

There are certain things that become a part of any safety program. You must have top management interested, and in full accord with the safety program. This we have. You must have cooperation from the employees with whom you work.

You must have good housekeeping. We work on this at all times, and try not to let junk accumulate. Good housekeeping is a matter of everlasting effort, but we are thoroughly convinced that it pays off in quality work and lower production cost, to say nothing of safety. Aisles are marked and are kept clear at all times.

Another thing stressed is machine upkeep. Our millwright crew can, at any time, shut down a machine whenever they think a dangerous condition exists. This is in accordance with the policy of Superintendent Melville Combs.

EVERETT PIPPIN, JR., is Personnel and Safety Director, Vitreous Steel Products Company, Nappanee, Ind.

This is the secret to
Titan
protection



The picture tells the story.
Titan's dual trussed nickel-silver
bridge, riveted at four points, equips this
outstanding B&L metal-plastic safety frame to take
an unbelievable amount of punishment.

With its superior protection, extreme comfort, and flattering
S-7 lens shape, Titan has become an industry
favorite almost overnight.



Want to know more about Titan and the
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frames and Bal-SAFE lenses?
Write for "Complete Eye Protection":
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TAYLOR MADE *Alloy Steel* CHAIN!

assures a greater safety factor!

A certificate of test is issued with every Taylor Made Alloy Steel Chain to prove that it has been tested to twice its working load limit. This represents a safety factor twice that of wrought iron chain.

stays on the job longer!

Taylor Made Alloy Steel construction and controlled heat-treatment increases the life of the chain—makes it tougher, harder and more resistant to shock, grain-growth and work-hardness than wrought iron types.

costs less than wrought iron types!

Actual operating experience in scores of plants has proved that Taylor Made Alloy Steel Chain's greater safety, superior strength and longer life assures far lower chain costs in the long run.

See your DISTRIBUTOR or send coupon!
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S. G. Taylor Chain Co.
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Hammond, Indiana
Please send Bulletin 13 giving all the facts and
specifications on Taylor Made Alloy Steel Chain.

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Address _____
City _____ State _____

TAYLOR MADE
A GREAT NAME IN
Chain SINCE 1873

His first thought on any job is, "Is it safe?"

When a new employee is hired, the personnel and safety director instructs him or her in detail about our safety program.

To show the momentum our program has built up, a frequent comment from a new employee, after being told of our safety program is, "Yes, I have heard of your safety program." Right here we feel we have made a tremendous step in getting the new employee off on the right foot safety-wise.

Monthly safety meetings are composed of foremen and supervisors. Supervisor reports are reviewed in connection with doctor cases if any occurred between the intervening meetings. These reports tell us the cause of the accident, how it happened, and the reason for the accident. We then remedy the situation and discuss how to prevent a similar one.

At each meeting every member is asked for safety recommendations. Those which seem to have merit are turned over to the proper authorities and executed. Each meeting is devoted to a specific subject, led by the safety director. For example, some of the things discussed were artificial respiration, burns, and shock. We definitely feel a safety meeting held at least once a month is essential toward making a safety program click.

We receive help from our insurance carrier. Their inspector, who makes periodic inspections, almost always sees things that he thinks could be improved. After all, it usually is the person not living in the house who sees the cobwebs on the ceilings. No matter how good your intentions, you sometimes miss habitual hazards. We work closely with the insurance engineers and it has paid dividends.

The biggest factor in our program, perhaps, is our incentive system, which we began in 1944. We decided to set aside a sum of money each month for prizes, provided there were no disabling injuries that month. For years, we have set aside at least \$75 a month for this program, and on special occasions we raise this amount sharply.

Practically all of our incentive

periods run for one month. We have a wheel divided into chords, with each employee's clock number on that wheel. At the end of the month when we haven't had a disabling injury, we assemble the gang at the change of shifts, and throw darts at the spinning wheel for prizes.

One month we will have a grab bag with 15 prizes in it, at a total cost of \$75. Other months we may have 15 sacks of groceries valued at \$5 each. We have sent couples to big league baseball games and Notre Dame football games, given clothing, and many other items. We tried giving one or two larger items, but find smaller prizes and more winners develop better incentive and enthusiasm. Varying the incentive helps keep interest higher.

Our slogan "Accidents Nix in Nineteen Fifty-Six," is placed throughout the shop where employees will see it continuously, and each year a new slogan is presented.

A large sign is displayed in each department showing the last date

of a disabling injury in that particular department. The first of each month we post a notice on the bulletin boards giving the number of days worked in each department since the last disabling injury. Incidentally, these notices are placed on colored paper, the colors varied each time.

Listed as follows are the number of accident-free days worked as of February 1, 1956:

Millwright Crew	3,822
Second enamel shift	3,818
Shower Department	3,359
First enamel shift	3,336
Iron Room	2,563

When a department completes 10 years without a disabling injury, all employees in the department are treated to a steak dinner. Two departments have already had their dinners.

We are members of the National Safety Council and the Elkhart County Safety Council. For the past five years we have participated in the National Safety Council Contest, and have won many plaques. Previously, Vitre-

ous Steel received three Awards of Merit. We also subscribe to the National Safety Council monthly jumbo poster service. The poster, changed each month, is placed in a conspicuous place where all employees may see it. The Council's advice and help on safety problems is invaluable.

When our record is broken, when the odds or element of time catch up with us, we will say, "Sorry, gang, our record is broken. Let's start over and shoot for a new record." Our safety program has done what we set out for it to do. It has made our gang 100 per cent safety conscious, which was our intention from the beginning.

The husband was curious. "Why do you weep and sniffle at a movie over the imaginary woes of people you never met?"

The wife replied, "The same reason why you scream and yell when a man you don't know slides into second base."

NEW HOOD "Grip-all"

GLOVE

... gives workmen

a safer, surer grip!



Hood's new "Grip-all" glove is designed for workmen handling sharp, slippery objects such as plate glass, sheet metal, etc. It has an impregnated extra-coarse rubber dust surface that is super-resistant to slipping. It is also completely flexible — allows free finger movement, enabling workmen to grip hard and fast.

The "Grip-all" is also heavy-weight, long-wearing and protective. Its tough surface prevents hand scratches and cuts from sharp edges and corners. Rigorously tested in glassmaking plants, the Hood "Grip-all" is available in five different styles. They include palm- and fully-coated styles with knit wrists and 2" and 4" safety cuffs.

HOOD RUBBER CO., Watertown, Mass.

a division of the B. F. Goodrich Company



Write today for free Hood Glove Guide — shows you how to choose the RIGHT glove for EACH job.

RUBBER • NEOPRENE • PLASTIC COATED INDUSTRIAL GLOVES

FOR DISTINGUISHED SERVICE



**National Safety Council
awards for outstanding records**

THREE TYPES of awards are given by the National Safety Council to industrial units in recognition of outstanding performance in accident prevention:

1. THE AWARD OF HONOR is available to units whose records, though not perfect, meet rigorous standards of excellence. These standards take into account the previous experience of the unit as well as the experience of the industry in which it operates. A unit must qualify on both frequency rate and severity rate. The Award of Honor is available also to units which complete 3,000,000 man-hours without a disabling injury.

2. THE AWARD OF MERIT has similar, but less exacting requirements. Minimum number of injury-free man-hours needed to qualify is 1,000,000.

3. THE CERTIFICATE OF COMMENDATION is available only for injury-free records covering a period of one or more full calendar years and totaling 200,000 to 1,000,000 man-hours.

Details of eligibility requirements may be obtained by writing to the Statistics Division, National Safety Council.

AWARDS OF HONOR

Ford Motor Co., Dearborn (Mich.) Specialty Foundry.
General Electric Co., Syracuse (N. Y.) Plant.
Goodyear Atomic Corp., Portsmouth, Ohio.
Pittsburgh Plate Glass Co., Works No. 6, Pittsburgh, Pa.
Rohm & Haas Co., Bristol (Pa.) Plant.
Standard Oil Co. (Indiana), Whiting (Ind.) Laboratories.
United States Rubber Co., Providence (R. I.) Plant.
United States Steel Corp., Fairless Works, Fairless Hills, Pa.
Western Electric Co., Inc., Hawthorne Works, Chicago.

AWARDS OF MERIT

Allegheny Ludlum Steel Corp., Dunkirk Works, Brackenridge, Pa.
American Can Co., Illinois Plant, Chicago.
American Oil Co. (Texas), Texas City Refinery.
Avco Manufacturing Corp., Lycoming Division, Stratford, Conn.

Cabot Carbon Co., Walton Plant, Pampa, Texas.
Dan River Mills, Inc., Division No. 2, Danville, Va.
Dan River Mills, Inc., Riverside Division, Danville, Va.
Esso Standard Oil Co., Charleston (S. C.) Refinery.



DISPLAYED proudly with the Stars and Stripes is this Green Cross for Safety pennant at the Rock Flats (Denver, Colo.) plant of The Dow Chemical Company. Left to right: Frank Mihevc, Plant Protection; W. F. McKelvey, safety engineer, and E. E. Hicks, safety engineer.

General Electric Co., Two awards: Ballast Department, Danville, Ill.; Plastics Department, Decatur (Ill.) Plant.

Goodyear Atomic Corp., Portsmouth, Ohio.

The Mead Corp., Georgia Kraft Co., Macon.

The Mead Corp., Chillicothe Division, Chillicothe, Ohio.

North American Aviation, Inc., Rocketdyne Division, Los Angeles.

Oklahoma Gas & Electric Co., Oklahoma City. Entire company.

Sperry Rand Corp., Remington Rand Division, Louisiana Ordnance Plant, Shreveport, La.

Skelly Oil Co., Tulsa, Two awards: Natural Gasoline and Gas Division; Oklahoma-Kansas District.

The Texas Co., Port Neches Works, Houston.

United States Assay Office, New York City.

Westinghouse Electric Corp., Two awards: Aviation Gas Turbine Division, Kansas City, Mo.; Electronic Tube Division, Elmira, N. Y.

CERTIFICATES OF COMMENDATION

Amarillo Helium Plant, Four awards: Amarillo Helium Plant; Exell Helium Plant; Navajo Helium Plant; Otis Helium Plant.

Celanese Corp. of America, Newark Chemical Plant.

Pacific Power & Light Company, Dalles District, Portland, Ore.

Remington Rand, Bridgeport Remetic Plant.

United States Steel Corp., Tennessee Coal & Iron Division, Two awards: Dolonah Quarry, Fairfield, Ala.; Zinc Mines, Fairfield.

Virginia Carolina Chemical Corp., Richmond (Va.) Bag Plant.

STYLE



LOOK TO **WILLSON**
for the best in protection, comfort and styling



COMFORT

WILLSON

supplies more than 50 Safety Spectacle Styles that give wearers the same positive protection, maximum comfort, eye-pleasing styling as these 12 popular designs.



Style WF

• New wide vision frame shape in flesh-color butyrate. Provide maximum protection but don't look like safety spectacles. Handsome styling appeals to workers, provides safety with comfort. Spatula or half-plastic—half-cable temples, full range of eye, bridge and temple sizes. Also available in bronze-color as Style WFB.

Style WF —6.00 C—Clear ST* Lens—\$2.75



Style WFH

• Distinctive new half-frame design with demi-amber overlay on upper portion of crystal butyrate frame. Wide vision lenses, spatula temples. Also available with all demi-amber frame and temples as Style WFD. New style concepts typify Willson leadership in safety spectacle design.

Style WFH —6.00 C—Clear ST* Lens—\$3.15

Style WCS—Willson Contour-Spec®



• Unique hinged bridge sets WCS series apart from ordinary safety spectacles. One size for all faces . . . broad or narrow—long or short. Fits all bridge widths from 18 to 26 mm. One eye size—47 mm. Contour-Spec frames, temples and sideshields are of sturdy, combustion-resistant acetate butyrate—Style WCS47 in flesh color, WCSG47 in green. Patented Contour-Spec temples assure safe comfortable fit.

Style WCS —6.00 C—Clear ST* Lens—\$3.05



Style WP

• Saddle bridge provides maximum strength and rigidity. Sturdy combustion-resistant frames, temples and sideshields of acetate butyrate—Styles WP and WPS in flesh color—WPG and WPSG in green. Has on-line temples—standard with half-plastic—half-cable but also available with spade temples and elastic headband.

Style WP —6.00 C—Clear ST* Lens—\$2.50



Style WBS

• Distinctive bronze-color acetate butyrate frames, temples and sideshields—sturdy and combustion-resistant. Choice of half-plastic—half-cable temples or spatula type. Pleasing design incorporates "keyhole" bridge and Hi-Line® temples. Also available with adjustable rocker nose pads. Style WB without sideshields.

Style WBS —6.00 C—Clear ST* Lens—\$3.30

LOOK TO **WILLSON**

• Same design and features as WB series except that acetate butyrate frames are flesh color. Style WKS with sideshields. Style WKPS with sideshields and adjustable rocker nose pads. Style WKP with nose pads but without sideshields.

Style WK —6.00 C—Clear ST* Lens—\$2.75



Style WK

• Modern frame with Hi-Line® temples permits unobstructed vision. Metal reinforcing bar adds strength and rigidity. Adjustable plastic rocker nose pads assure comfortable wearing. Sturdy, flexible covered industrial cable temples easily bend to and hold proper fit. Metal parts are of strong nickel silver, nickel plated for extra resistance to corrosion.

Style AVS —6.00 C—Clear ST* Lens—\$3.05



Style AVS

• Sturdy frame with on-line temples, metal reinforcing bar and easy lens replacement feature. Available also with pearloid brow rest (Styles A1 and AS1) for extra comfort. Flexible cable temples covered with sweat-proof plastic. Rocker nose pads adjustable for proper fit. Metal parts are non-corrosive for long service.

Style A —6.00 C—Clear ST* Lens—\$2.65



Style A

• Heavy duty spectacle with 50 mm round lenses, on-line industrial cable temples, and saddle nose bridge. Metal reinforcing bar strengthens nickel plated, nickel silver frame. Recommended as protection from frontal impact for grinders, buffers, drill press operators, etc.

Style B119 —Flat Clear ST* Lens —\$2.10



Style B119

• Features high arch adjustable bridge with special leather curtain to prevent particles from reaching eyes from above. Perforated leather sideshields add comfort and protection. Lenses are 50 mm round. Temples are industrial cable type.

Style M50-OL—Flat Clear ST* Lens —\$2.25



Style M50-OL

• Rugged, all-purpose safety spectacle for heavier-than-average impact hazards from all angles. Clear perforated plastic sideshields, saddle nose bridge, reinforcing bar, and covered industrial cable temples.

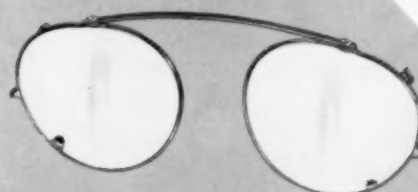
Style F350 —Flat Clear ST* Lens —\$2.00



Style F350

• Clip-on spectacles have lightweight frames of gold-color, non-corrosive metal. Fitted with 44 mm unhardened clear lenses. Designed for very light impact hazards or as a cover for spectacle type goggles to prevent pitting. Also recommended as protection for prescription glasses during occasional exposure to hazards.

Style C01 —Flat Clear Lens —\$.55



Style C01

*ST—Super-Tough Heat Treated Lens

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WILLSON

The continuing efforts of the Willson Research Center are your assurance that the quality Willson products you buy are the most modern on the market.

Today's extensive line of Willson safety equipment stems from five generations of this same intensive research and development. Each of the more than 300 products now bearing the Willson trademark reflects the quality and craftsmanship of 86 years devoted exclusively to the manufacture of safety equipment.

research center

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EL PASO, TEXAS—E. D. Bullard Co.
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GREENVILLE, S. C.—Carolina Supply Co.
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HOUSTON, TEXAS—Allied Safety Equip. Co.
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Orr Safety Equipment Company
MEMPHIS, TENN.—Clement Safety Equipment, Inc.
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TAMPA, FLA.—Cameron & Barkley Co.
TOLEDO, OHIO—Safety First Supply Co.
TROY, N. Y.—The Troy Belting & Supply Co.
TULSA, OKLA.—Krisman Industrial Supply Co.
WICHITA, KANS.—Pittenger & Davis
CANADA—Safety Supply Company
Toronto, Montreal, Ottawa, Edmonton, Vancouver, Halifax, Trail, Winnipeg

Call the Willson Distributor nearest you today for complete details on Willson products for Industrial safety—or write directly to Willson for your free catalog of eye, respiratory and head protection equipment.

Over 300 Safety products carry this famous trademark

WILLSON

PRODUCTS DIVISION Ray-O-Vac Company Reading, Pennsylvania

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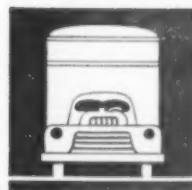
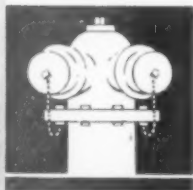


The Journal

OF THE AMERICAN SOCIETY OF SAFETY ENGINEERS

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MAY, 1956

AMERICAN SOCIETY OF SAFETY ENGINEERS

Organized 1911 — Chartered 1915

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S THIS second issue of the Journal goes to press, we have on hand many complimentary letters on our new publication. We are indeed grateful. We also have received a number of suggestions, which we appreciate especially, for we want to make this publication as useful as possible. One of the suggestions—printing the Safety Engineers' Creed in a manner suitable for framing—you'll find in this issue . . . We're happy, too, that Society membership information in the first issue brought national headquarters some 75 requests for application forms . . . We think we've lined up some fine articles for this issue. We're very proud of the "twins" on the controversial 88:10:2 ratio, by those two prominent safety pioneers, H. W. Heinrich and Roland P. Blake. Mr. Heinrich, whose research and writings have earned him an international reputation, has been a member of our Society since 1924. Mr. Blake, also a member, began his safety career nearly 45 years ago and continues today as consultant for the Bureau of Labor Standards, from which he retired last year as principal safety engineer and chief, Technological Branch.

How Does A Creed Develop? What Can It Mean To Us Personally?

WHAT we believe, deeply and sincerely, we generally try to put into some carefully worded statement which will tell others just what we stand for as a group and as individuals. Often this statement is called a creed.

The members of the American Society of Safety Engineers subscribe to such a statement, the Creed of the Safety Engineer, a formally adopted, individual professional pledge. Some Society chapters use the Creed in ceremonies for the initiation of members and installation of officers. Other chapters give it a much less prominent place in their activities.

But perhaps every safety engineer on occasion has felt a personal need for a tangible expression of his professional attitude. The Creed of the Safety Engineer exists to help fill that need. In answer to a number of requests, it is printed on the inside back cover of this issue of the Journal in a design which, framed and displayed as a certificate, will make an attractive addition to the safety engineer's office wall.

Whether it merely remains on the wall, or instead becomes an important influence in the safety engineer's life, depends on his efforts to apply the Creed and, even before that, on his knowledge of what this Creed, or any creed, means.

Dictionary definitions of creed include such phrases as "formula of belief," "summary of doctrine," "principle of action." It is possible that a complete definition of the word might go even further, for it seems universal among creeds that they contain, either explicitly or by implication, a dedication to those unselfish standards of service which ennoble man.

Creeds are found in practically every profession, every country, every century and every civilization from the beginning of recorded history. They fulfill, it would seem, a basic desire of man

to stand up and be counted, not only for what he has been—in failure, success, hypocrisy and honesty—but also for what he would like to be—in a vision of Utopia that is at once a guide and a goal.

Creeds are expressions of ideals and, like many other abstractions, they are easier to read than they are to understand fully. Often they must be studied long and thoughtfully before their meanings can be completely grasped; not because they are vague, but because they are complex.

Most creeds have gone through a slow process of development, and the present product usually is the result of the work of several generations of philosophers. Every paragraph, every sentence, every phrase becomes highly polished, concise, packed with significance. It might be said with some justification that our creeds are the most mature expressions of ideas man has achieved.

Undoubtedly the most well known creeds in our culture are those of the Christian religion. Probably the most widely used by churches today are the Nicene Creed and the Apostles' Creed, both of which

have gone through a number of variations during the centuries since they first were formulated. In general, the form and content of the Nicene Creed dates from the year 325, the Apostles' Creed from about 400. But even before this, confessions of faith had been written which contained many of the ideas, and even some of the phrases now used.

Many engineering societies have adopted creeds, most of which are similar. In wording, these creeds do not have the antiquity of the religious creeds. But in ideas, the engineering creeds are as old as the concepts of truth, honor, duty and brotherly love. And it is these age old principles that members of the American Society of Safety Engineers affirm their belief in, and dedicate themselves to, with the Creed of the Safety Engineer.

WHAT WE BELIEVE

*often is formalized in a
creed that we can use as
a guide in our work and
lives. Such is the Creed
of the Safety Engineer.*



by H. W. Heinrich

H. W. Heinrich, superintendent, Engineering and Loss Control Division, Travelers Insurance, is the author of four books, including "Industrial Accident Prevention," which reported the 88:10:2 ratio.

PRO

MAN or machine as the prime factor in accident causation is a subject that provides fuel for much discussion and difference of opinion. The differing opinions simmer down basically to three in number. One concludes that man is chiefly at fault. One believes that machine is the guilty party and the third opinion is that both man and machine are responsible in practically all cases.

There is danger, real and tangible, in any one of these three points of view when held by any individual who himself or through his influence or authority, controls or directs the work of accident prevention and who, because of the misapplication of his belief, permits correctable accident causes of any kind to exist.

It is high time to "clear the deck" for action toward an agreement to which everyone surely will subscribe, namely:

"When a machine, tool, structure, procedure, process or anything else of a mechanical nature is involved in accident or injury, first consideration invariably should be given to the possibilities of correction that lie in guarding, relocating, rearranging, automation and other forms of engineering revision, regardless of whether the primary cause is man or machine."

This is but good sense. If a machine can be made foolproof, by all means let's make it so. A mechanical hazard is tangible and often subject to quick control. It ought to be corrected, if at all practicable, whether or not it causes an injury or accident.

The foregoing agreement is the stated creed of the writer, who also is responsible for research leading to the publication of the often quoted and misquoted ratio which shows that 88 per cent of all industrial accidental injuries are caused chiefly by unsafe acts of persons, 10 per cent by mechanical causes and 2 per cent by so-called Acts of God. The agreement and the ratio are not in the least inconsistent, although they may appear so to the casual reader. The first—the creed—refers to *primary consideration of corrective action*. The second—the ratio—refers to *primary causation*.

It is true that in general the primary cause should prompt the corrective action. That's why it must be found and recorded. But it certainly should not prohibit *first* action of an obviously common sense nature on a sub-cause. An excellent example is that of an eight year old

The Accident Cause

Physical Hazard May Call for First Attention

But Ratio Shows Manfailure as Prime Cause

Needing Corrective Action, Heinrich Maintains

who filched a box of six inch, salute-type cannon crackers from an unattended parked truck delivering supplies for an unauthorized fire works display. His father came upon the boy sitting on the porch at home, holding a cannon cracker and about to light the fuse with a match. Here is an accident and serious injury in the making. Clearly from primary cause analysis, everything points to unsafe acts and manfailure—the action of the youngster and the unattended truck. But when it comes to *first corrective action*, no one will disagree with the father who at once recognized the potential physical hazard and knocked both match and cannon cracker out of the boy's hands. Then he proceeded with his educational effort, and who would disagree with the long range value of recording the primary cause as *personal* or with the pressing need of a personal remedy to prevent future similar actions of the boy, the driver and the community enforcement officials!

In conformity with the creed is the accepted maxim, "Safety begins with a well guarded work place—with safely designed processes, procedures, structures, tools and equipment—with guarded equipment—with good housekeeping and adequate light, heat, ventilation and sanitation." This is basic thinking and because it is so, it justifies consideration always of opportunities in the correction of mechanical hazards. It does not justify failure to select prime causes of accidents when these are of a personal nature.

To be truly objective one should keep in mind that *prevention* of accidents and injuries is the aim of industry in the safe production of goods and services. It follows that knowledge of causation is essential as a guide to preventive action. It is clear also that knowledge of all correctable causes, both primary and secondary, both personal and mechanical, is necessary. Practicality and expediency then play a part in selecting the first corrective step in prevention. For example, if a workman in violation of repeated instructions deliberately and unnecessarily tampers with a well guarded machine and becomes injured—if in this case the addition of a more tamper-proof type of lock is practical—by all means install that lock.

In such a case, however, is it good procedure to overlook the fact that the workman deliberately acted in an

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Ratio — 88:10:2

Ratio Concept Is Fallacy, Harmful to Safety

Because Used to Rationalize Neglect

Of Unsafe Mechanical Conditions, Blake Says

IN MY opinion the very concept of a ratio between physical hazard and unsafe action in injury causation is both fallacious and harmful. The purpose of this discussion is to present the considerations that have brought me to this belief.

Note that I use the term "injury" rather than "accident." The primary purpose of accident prevention is, of course, to prevent injuries but unfortunately many people use the terms "injury" and "accident" synonymously. I wish to avoid contributing to that confusion. If we define "accident" as "any unplanned or uncontrolled occurrence that interrupts or interferes with the orderly progress of the activity in question," it becomes clear that when we use the term "injury" in this connection we mean an injury caused by the accident. The misuse of these terms undoubtedly resulted from superficial thinking in the early days of the safety movement followed by unthinking acceptance of this misuse by many ever since.

I consider the ratio concept another case of superficial thinking. Who started it I do not know but its wide unthinking acceptance has done much through the years to retard and inhibit the work of accident prevention, as I shall try to show.

The idea that injuries are caused by *either* physical hazard *or* unsafe acts is an appealing one because it is so simple. Just guard the hazard *or* get the fellow to work safely—make him safety conscious and—no more injuries. But it doesn't work out. "Of course not," say the acceptors of the either/or idea. "Some fellows are just naturally careless, or they are accident prone, or they deliberately disobey instructions," and so on. We've all heard those alibis and others like them. There is a measure of truth in each of them. Perhaps the term alibi is too strong because probably they are rarely if ever used consciously as alibis; they are just further evidence of superficial thinking.

We are all guilty of superficial thinking at times but let's see if we can't get down to fundamentals on this issue and find out where it will lead us. We'll start with the factor of physical hazard. Is an injury possible without some degree of hazard? Chew on that one a while. You'll be forced to say no. Next ask yourself if a hazard can injure unless "it makes contact," as our military friends would say. That brings in the unsafe act as any action that causes or allows a hazard to make

by Roland P. Blake



Roland P. Blake, consultant, Bureau of Labor Standards, has written many articles and is editor and co-author of the book, "Industrial Safety," in which the accident cause ratio is discussed as a fallacy.

CON

contact. But sometimes it's lack of action that permits contact, so we broaden our term to "faulty behavior" to include the whole bag of tricks—unsafe action, unsafe inaction, inadequate action, wrong action, etc.

If you accept this line of reasoning you must admit that the ratio concept is inapplicable—fallacious—in expressing the relationship between physical hazard and faulty behavior, or as H. W. Heinrich puts it, "man failure." To any reader who still cherishes the ratio idea I would say, "Use a 100 to 100 ratio if you must have a ratio, for that and only that is valid."

Incidentally, it is surprising to me that so many safety engineers have accepted the ratio concept. Of course, ratios are a much used tool in engineering, particularly in expressing specific relationships having to do with the materials and forces the engineer works with. But engineers are trained to think in terms of fundamentals and also to demand accuracy. So I am still surprised.

But perhaps I'm expecting too much even for engineers. Let's run over the history of this ratio thing to find out how it came about. So far as I know, Heinrich's study reported on in his book, "Industrial Accident Prevention," was the first attempt to establish a definite ratio. A careful reading of his language shows clearly that his purpose was to find out in what proportion of injuries an unsafe *mechanical* condition was the more important causative factor and in what proportion an unsafe *act* was the major factor. As probably every reader knows, this study brought the ratio 88:10:2—88 human failure, 10 mechanical hazard and 2 unpreventable.

There is nothing in Heinrich's language to indicate that he regarded his ratio as more than an approximation. Furthermore, it was gained partly from injury reports made for the purpose of determining the compensation due and partly "from the records of plant owners." But except where such reports are based on thorough investigation by competent personnel, the information as to cause is limited and frequently unreliable. In other words, the analysts going over the 75,000 accident reports covered by this study had to do a lot of guessing. But my hat is off to Bill Heinrich for it was a tremendous undertaking. It must have been a labor

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unsafe manner, that with his attitude unchanged he will in all probability do similar things again and that through competent supervision both his attitude and practice may be improved? Yet when accident cause-analysis charges such accidents to machine and not to man, or even when both causes are given equal weight, attention is directed away from instead of toward the place of greatest long range opportunity.

The great majority of electrocutions of linemen in public utility operations occur almost wholly because of failure to wear rubber gloves, to use insulating protective equipment such as rubber pigs and blankets, to follow prescribed safe procedure in disconnecting sources of energy, in grounding and in maintaining safe clearances. In practically all of these cases, a mechanical exposure in some degree existed. For example, the very fact that linemen must work at times in proximity to live wires carrying high tension current indicates the existence of a mechanical hazard.

Is Hazard Prime Cause?

This hazard, as in the prior example, should receive first consideration. But should it be recorded as the prime cause? Practicality and expediency direct attention to personal unsafe practice as a primary cause when a lineman who fails to wear rubber gloves is electrocuted.

There is general agreement also that traffic accidents are caused primarily by the unsafe action of the driver or pedestrian. In this connection it is of interest to note that the National Safety Council's "Accident Facts," 1955, shows that about 94 per cent of vehicles involved in fatal accidents for which condition was stated *had no unsafe condition*.

To the writer's best knowledge only one comprehensive attempt has ever been made to assign major responsibility—in consideration of time sequence, practicality, expedience, and best effect on the prevention of similar accidents—to but one of these two causes in cases where both exist. The results of that study were first published in 1926 and appear in "Industrial Accident Prevention" under the caption, "Man vs. Machine," as the ratio 88:10:2, the 88 per cent applying to accidents caused primarily by man. In 75 per cent of the 75,000 cases thus analyzed, there was no need to choose between the personal and mechanical causes as *there was but one cause*, as when a hand trucker walking backwards while pulling his truck along a well marked aisleway, under excellent housekeeping conditions, bumped into a properly located concrete post.

In the 25 per cent residue, both personal and mechanical hazards existed, *but not always to the same degree*. Judgment was exercised. In balanced and doubtful cases, preference was given to the machine cause. After careful consideration, only one cause was assigned for recording and coding purposes. The basis of selection has already been described. In the majority of instances it pointed definitely to manfailure.

Contrasted with the method of analysis described in the foregoing is that which results in the ratio of 94.9 per cent unsafe personal acts and 94.5 per cent unsafe mechanical conditions. Admittedly, in arriving at this

almost exactly balanced ratio, both causes when present were recorded for each accident and no attempt was made to select the cause of most importance in prevention.

The *method* of approach therefore accounts chiefly for differences of opinion and not the belief based on cause-analysis that one ratio or another is in error.

Some Call Ratio Harmful

Some capable and conscientious safety engineers have said that "the publication of a ratio showing manfailure to be the primary cause of accidents is harmful because it encourages persons who are responsible for the correction of unsafe mechanical conditions to evade their responsibilities on the basis that such conditions have an insignificant place in accident occurrence."

Proof that this belief has widespread or disturbing application is difficult if not impossible to obtain. This writer doubts its validity. He is of the opinion that one who evades responsibility on such a basis would readily find some other available excuse. In the face of legal requirements the excuse would have no weight whatever. Where no legal requirements exist, he would need no such excuse inasmuch as those who might suggest correction of mechanical hazards would have no authority.

Furthermore, the 88:10:2 ratio does not negate the field of mechanical guarding. Ten per cent still represents a sizable number of accidents caused by machine, especially when these are *primarily* or *wholly* so caused.

Members of the safety profession and industrialists in general can be assumed to *want the facts*, whatever they indicate. Granted that it may be simpler to guard a machine than to control the performance of an employee, yet should we imitate the proverbial ostrich and ignore the facts by failing to select primary causes?

The profession will welcome further research with regard to man versus machine in accident causation. When it has been accomplished its findings should be accompanied by a statement of the method used; that is, by mention of the basis of selection of responsibility. This is necessary to prevent misunderstanding.

Pending the publication of such further data the 88:10:2 ratio stands alone and on its own feet as an attempt to determine the major direct cause of accidents. It remains undisputed as yet by other than honest personal opinion. It quite properly features the personal unsafe act as the major direct cause of accidents.

Manfailure Emphasis Pays Off

As a direct result of emphasis on manfailure, the records are replete with cases of low accident frequency and severity rates achieved through management interest and participation, supervisory control of employee performance, publicity, education and organization.

Thanks to the original and still-continuing emphasis placed on machine guarding and other physical or mechanical safety efforts, marked improvement has been made in accident frequency from mechanical sources. Those who feature such methods above all else and who at the same time fear the emphasis being placed on manfailure, should find a source of gratification in a ratio showing so clearly that a reduction from an indefinite yet undoubtedly high figure to but 10 per cent of all

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of love indeed. The man hours required to go over 75,000 injury reports one by one and decide in each case which was the major causative factor must have run into big figures.

A study conducted by the National Safety Council found unsafe mechanical conditions in 87 per cent of the cases studied and unsafe acts in 78 per cent. The Department of Labor and Industry of Pennsylvania classifies the injuries reported under their Workmen's Compensation law as to mechanical cause and unsafe act. Year after year they show results similar to those of the Council study. I view the findings of these studies as lending strong support to my viewpoint. My own experience in investigating accidents reported for insurance purposes gives even stronger evidence. Thorough investigations made promptly enough to get the facts rarely fail to bring both physical hazards and faulty behavior to light. The weight of evidence supports the the common sense conclusion that injuries are the product of physical hazard *and* faulty behavior, rarely if ever either one to the exclusion of the other.

Early Safety Chiefly Guarding

Let's go back into history a little further—before Heinrich brought out his book. The first 15 years or so of the organized safety movement were devoted primarily to the elimination of physical hazards, chiefly guarding machinery. But the cost was heavy partly because little or no thought had been given to safety in laying out and equipping any but the newest plants and partly because most machines were still run from line shafting. The average large plant had thousands of feet of shafting, miles of belting and gears of all sizes and types, all busily carrying power from the prime mover on to the individual machines. Projecting set screws were everywhere too, until the counter-sunk type was developed and shown (after a long drawn out battle) to hold as well as the projecting type. Even as late as 1930 set screw hunting was a favorite sport for state and insurance inspectors.

The cost of guarding in such a plant ran high even in those days when the dollar would purchase perhaps three times what it will today. So naturally management squirmed and when, through the pioneer work of U. S. Steel and a few other safety leaders, the great value of safety committees in developing safe practice was demonstrated, they looked like the answer. Safety committees proliferated and the emphasis was increasingly placed on "arousing and maintaining employee interest." The terms "safety mindedness" and "safety consciousness" became cherished items in the vocabulary of just about everybody concerned with promoting the cause of safety.

Why Spend Money on Guarding?

Cost minded management naturally reasoned that if injuries could be prevented by developing safety consciousness, why spend substantial chunks of money to guard any but the more serious hazards?

Undoubtedly the ratio idea was born more or less

simultaneously in many men's minds during this period. I know I "met up with it" in the early nineteen twenties. And now on looking back to that period I must confess that I'm surprised at myself, for I accepted the ratio concept for a while and even carried on a little research of my own to determine what the ratio actually was. Even after I perceived the fallacy in it, I didn't try much to combat it. It's awfully hard to swim against the tide, you know.

Before Heinrich announced the findings of his study the ratio 15 to 85 was probably quoted most often. After that the odds sank to 10 to 90, a change that was most comforting to those who consciously or subconsciously were willing—perhaps even anxious—to prevent injuries if it wouldn't cost much.

Another factor has undoubtedly clouded this issue; namely, management concern and resentment over the ever increasing and more detailed state guarding requirements. In the beginning the state labor law administrative agencies played a very important part in cutting down the flow of serious injuries and deaths by developing safety regulations and enforcing them through factory inspection. Progress in safeguarding would undoubtedly have been much slower without state inspection.

As compliance with guarding regulations was increasingly secured, the injury totals from the hazards covered progressively declined. Finally the year-by-year reductions became so small as to be undiscernible. Instead, however, of broadening the safety inspection service in the light of the progress made in the field of accident prevention by private industry, the state agencies practically without exception merely continued their routine inspections and increasingly included unimportant details. They justified their budgetary requests—and mostly still do—chiefly or wholly by the number of inspections made and number of orders written without any reference to their value in preventing injuries.

Factory Safety Laws Punitive

The genesis of this situation is to be found in the factory safety laws themselves. They are primarily punitive. They were passed in the belief that employers as a class have to be forced to provide essential safeguards and that such safeguarding is the all important thing—the *all* of safety. So with very few exceptions the leaders of the state inspection services have taken no part in the organized safety movement and have little real knowledge of accident prevention.

You may wonder why I have written the foregoing. It is necessary to show some of the harm the ratio concept has wrought. The great majority of the annual occupational injury totals come from establishments too small to justify competent full-time safety personnel. Many of them are doing a good safety job but the majority are not and have high injury rates without knowing it. Their seeming indifference to safety is due to ignorance of what top rate safety performance is and why it would benefit them to achieve it.

The 10 to 90 or some similar ratio is very appealing to such managements because they naturally reason that if nearly all injuries are due to unsafe acts, they have little responsibility for employee safety. They charge the injuries to carelessness. And since a behavior fault can

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accidents chargeable to the machine, has been achieved. The following conclusions seem to be appropriate and defensible:

Accident Cause Analysis

1. The determination of facts as to the cause of each individual accident should precede and guide action concerning the prevention of similar accidents.
2. When determining facts as to accident cause, consideration should be given to both personal and mechanical causes *and* the effort should be made to decide which of the two is chiefly at fault.
3. If means exist to record both kinds of causes, then in cases where both exist, the one chiefly at fault should be recorded as number 1 and the second one shown in second place. This should be done regardless of the practicality of eliminating the selected cause (see items 6 and 7).
4. Causes should be determined *specifically* as items within the two general groups of personal and mechanical causes.
5. Mass cause data are extremely valuable in directing attention to the probability of accident occurrence from specific unsafe acts or conditions but neither such data nor any preconceived opinions should deter the investigator from the effort to find and record *all the facts*, nor from selecting that which in his best judgment is chiefly at fault.

Corrective Action Indicated

6. Inasmuch as the approved basic concept of industrial safety envisions a mechanically safe environment, first consideration in deciding on corrective action should be given to machine guarding and other forms of engineering revision, whether or not the chief fault lies in the personal unsafe act group. Concurrently action should also be taken to correct the personal fault when both kinds of causes exist.
7. When, as in the majority of cases, the personal unsafe act predominates and the unsafe condition is either absent or of a minor nature, consideration of a mechanical remedy, while still to be given as above suggested, should lead quickly and almost automatically to the selection and application of personal corrective action.

Statistical data together with the graphs and ratios derived from statistics are often claimed to serve entirely opposite viewpoints. True or false, no effort should be neglected to so present mass data as to eliminate probable opportunities for misunderstanding.

One such opportunity is indicated by this discussion; namely, the inclusion of accompanying and explanatory statements. These should cover the method or basis of selecting the data for the factors involved, definitions of headings and factors, and references to known data on the same subject.

It is the writer's hope that the publication of this material may be of some assistance in promoting a keener interest in the subject of man versus machine with regard to accident causation and perhaps also in encouraging effective prevention efforts based on established facts.

always—or almost always—he readily found when some workman gets hurt, they regard it as proof of the validity of the ratio.

I've had many contacts with this frame of mind because through the 21 years of my service with the Bureau of Labor Standards I have made it a practice to call on small plant managements at every opportunity. In many cases the plant management has invited me. The manager's viewpoint in the following case is typical.

About three years ago I was one of the morning speakers at a community safety conference. My subject was "The Appraisal of Plant Safety Performance." At the close of my talk the manager of a plant in the area introduced himself to me and after some discussion asked me to have lunch with him and look his plant over. I accepted. It was a typical foundry and machine shop making chiefly sub assemblies and parts.

Records Show High Injury Rate

His injury rate for the previous year, calculated from his reports to his insurer, was about 47. There was one amputation (a finger) and one serious burn. The rest were run-of-mine. The cost to the insurance company appeared to be well within the premium so the insurance inspector hadn't asked for much.

The manager—I'll call him Mr. Doe—blamed the injuries on carelessness, citing a number of cases called to his attention by his foremen. He particularly wanted me to tell him how to deal with carelessness. I told him I'd like to look over the plant and talk to the foremen first, a suggestion he welcomed. He asked me to point out anything that was unsafe. There were plenty of things but as I pointed them out his enthusiasm waned visibly. Finally he came out with, "Look here, Blake. I need help on this (blank) carelessness. Yet all you talk about are ways to spend money. Everybody knows that unsafe acts cause 90 per cent of all accidents. I'd be a sucker to spend a lot of money on the 10 per cent first. I'll go after the 90 per cent. When I get that licked I'll think about the 10 per cent."

That fellow ruffled my pride so I really went to work on him and finally made a sale. But it was tough going. I stayed over the next day and followed up by mail and a couple of calls back during the next few months.

Changes Approach, Improves

He is now doing a top rate safety job and has the carelessness thing pretty well licked. Incidentally, he joined the National Safety Council, entered a contest and is well on the way to an award.

I'm sure Mr. Doe would bear witness to the fallacy of the ratio concept, for it led him astray. His approach now is the same as that of every management that has brought its injury rate down close to the vanishing point. Stated briefly this is—"Maintain a thorough and painstaking joint program of hazard elimination *and* of safe and adequate behavior development." Never let up.

Now, dear reader, if you don't see both the fallacy in that ratio concept and the harm in it, my words have been wasted. If you agree with me, let's bury it deep.

Cutting and Welding FIRES

A Continuing Challenge

by L. G. Matthews

Secretary, Oxy-Acetylene Committee,
International Acetylene Association



L. G. Matthews is assistant manager, Safety Codes Department, Union Carbide and Carbon Corporation. He is a graduate of Purdue in chemical engineering.

THERE is no question but that some safety engineers believe we have done all we can to reduce cutting and welding fires—that the subject has been exhausted by literature and lecture. To be sure, the subject is hardly new. Twenty years ago there were articles on the “how to” of preventing these fires, and their message still holds today.

But the fact remains that while cutting and welding are sometimes overemphasized as causes of fire losses, there are far more such fires than there should be.

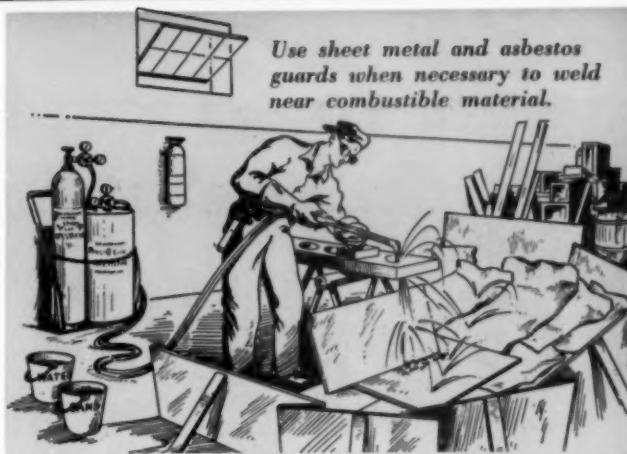
What are the facts in the case? Admittedly statistics on the subject are not exhaustive. Today's reporting will not permit interpretation to tenths of a per cent. However, those who have for many years been concerned about welding and cutting fires are in general agreement with the figures mentioned in the following paragraphs.

In brief, about nine out of ten fires traceable to cutting and welding occur when the work is done in a temporary location using portable equipment. Welding shops and other “permanent,” production-like setups are usually constructed and safeguarded so that fire possibilities are very much minimized. Almost the same ratio—eight or nine out of ten—of the fires are a result of cutting as compared to welding.

Some surveys point up the part played by portable equipment in even more emphatic fashion. Several years ago Western Underwriters Association examined 92 losses of over \$10,000 each that started from welding or cutting. Every one of the 92 was attributable to mobile equipment. It is interesting to note from the same study that 20 of the 92 losses were laid to “outside contractors,” a proportion perhaps somewhat smaller than usually conjectured. The Factory Mutual Record for March, 1954, said, “Nearly one-third of 311 cutting and welding fires reported by Factory Mutual insured properties in a recent typical year were caused by contractors.”

The Ounce of Prevention

The steps to be taken to prevent cutting and welding fires are no secret. Information of this kind has long been widely published in detail by a variety of sources—the welding industry and equipment suppliers and their



associations, insurance groups, the National Fire Protection Association and others. No re-recital of the “do's and don't's” will be given here. A list of some of the outstanding subject matter of this type appears at the end of this article.

The basic preventive measures are simple. They are not hard to understand. They all harken back to the fact that in welding and cutting operations two sides of the fire triangle are always present; namely, a source of ignition and air to support combustion. The other (and therefore controllable) element is the combustible material.

Boiled down, the essentials of cutting and welding fire prevention are:

1. Move the work to a safe location.
2. Move combustible materials a safe distance away.
3. If (1) or (2) is not possible, then by means of suitable fire-resistant guards (sheet metal, asbestos, etc.) protect the exposed combustibles and have someone standing by to extinguish any fire promptly.

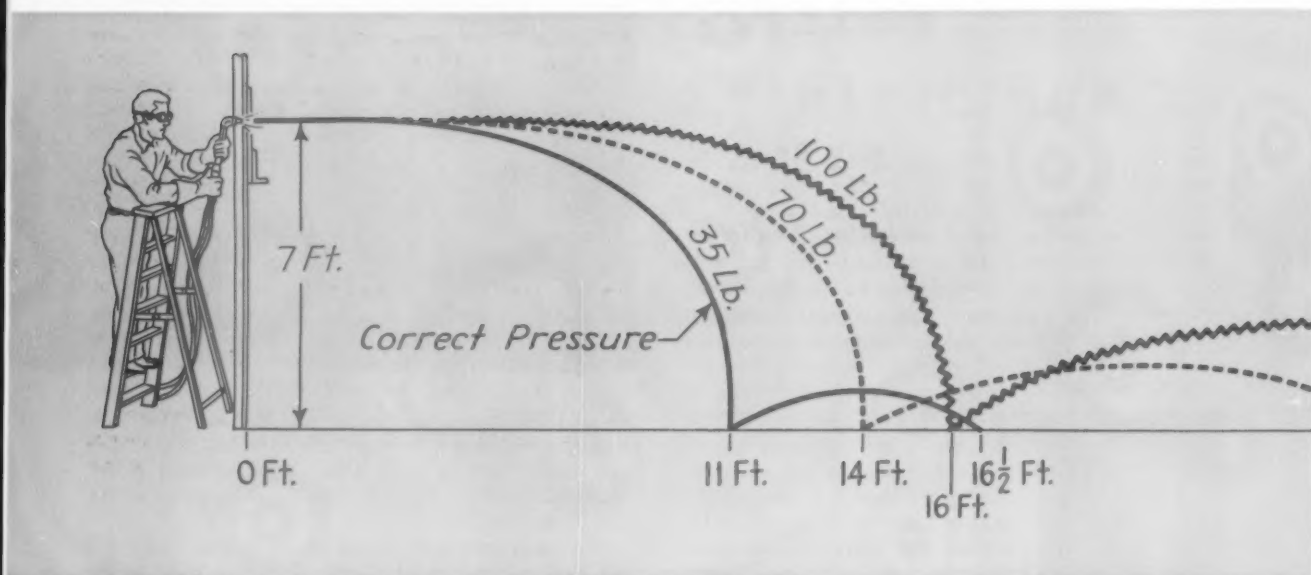
If one of these three simple conditions cannot be satisfied—and preferably in the order listed—it may well be that welding or cutting should not be done in the area in question.

To the above should be added two more items of major importance. First, it is good policy to make some competent individual responsible for the use of portable equipment. Second, the welding or cutting operator should always observe the equipment manufacturer's instructions for setting up and manipulating the particular apparatus in use. Procedures for correct handling of one make of cutting or welding torch will not necessarily apply to any or all others.

Still Something Missing

Where then does our problem arise? Why are we still plagued by cutting and welding fires, big or little? It will do us no good to debate such questions as the exact source of fires from these operations—whether from hot metal, hot slag or sparks. The practical fact is that they are all present and are all capable of starting a fire.

Do we lack controls? In larger industrial establishments systems of “welding and cutting permits” or “hazardous work permits” are often used. They help reduce the chance of serious fires being started but are not infallible. They require prior inspection of the work location by one or more supervisors or persons in author-



Protect floor or wall openings to shield adjacent areas from sparks.

Before cutting or welding in new location, operator should check with area foreman or supervisor.

CUTTING AND WELDING FIRES *Continued*

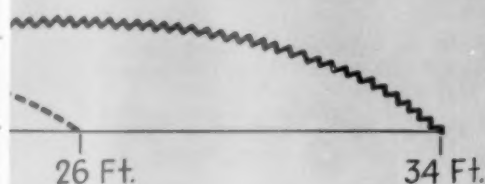
ity and sometimes a re-inspection after the work is completed. Smaller plants or those engaged in construction and demolition work may not think these permits practical. In any case they are still dependent on the carefulness, judgment and diligence of those who authorize the work.

At its annual meeting in 1954 the International Acetylene Association held a panel session on prevention of welding and cutting fires. At that session the safety director of one of the major suppliers of welding and cutting equipment suggested that it may be oversimplification to say that fires occur just because combustibles are too close to the welding or cutting operation or inadequately protected from it. This is an interesting and provocative thought.

The distance or degree of protection that will adequately safeguard materials from a nearby cutting operation may depend on the specific combustible material, its ease of ignition and rate of burning, the method of piling or storage, the quantity stored, sprinkler protection, pro-



Relation of cutting-oxygen pressures to distances the resulting sparks will fly.



vision of fire watchers and other related factors. With an adequate understanding and appreciation of the risks involved, a practical decision on amount of separation or type of protection can be made.

Another interesting clue to the problem appears in the following table taken from a mailing insert prepared some time ago by South-Eastern Underwriters Association:

CAUSES OF FIRE LOSSES FROM CUTTING AND WELDING

Insufficient preparation	49%
Floor and wall openings admitting sparks to adjacent areas	18%
Impaired protection	18%
Defective welding equipment	5%
Miscellaneous conditions	10%
	<u>100%</u>

"Insufficient preparation" is a most apt description. It says neatly and simply what it is that turns the area of a temporary cutting or welding job into the scene of a fire. Actually, what is "floor and wall openings admitting sparks to adjacent areas" but more "insufficient preparation"? Closing or covering those openings would probably have made the preparation sufficient. So on this basis something more than half of the losses go back to failure to evaluate the risks properly or to do enough about them before the job was started. Even "impaired protection" and perhaps to some degree "defective welding equipment" are "insufficient preparation." It is interesting to see that this group (South-Eastern Underwriters) finds only five per cent of the fires due to defective welding equipment.

From this it seems rather clear that the cutting or welding operator is more alert to the potential hazards in leaking connections, worn hoses and damaged or plugged torch tips than he is to the potential hazards of the surroundings in which he works.

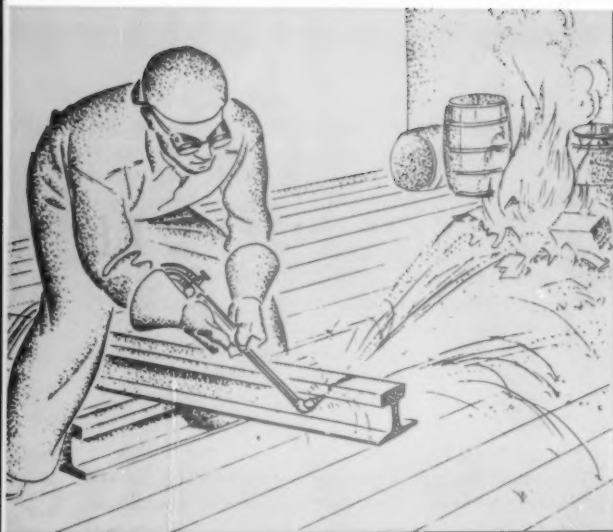
The Heart of the Problem

What's behind insufficient preparation? Why aren't sufficient preparations made? To our knowledge no one has ever attempted to compile statistics or data on this point. However, from experience it would seem almost certain that some of the reasons would be: eagerness to make a quick repair to prevent a production loss; errors in judgment in assessing the risks involved; the "it-can't-happen-here" attitude; and just plain carelessness.

Without benefit of statistics, data or tables, all these things and others like them can be lumped into one—insufficient training. This is the crux of our problem. Better training, better education of the man with the torch in his hand, and in some cases of his foreman or supervisors, is the indicated positive attack to reduce cutting and welding fires. A properly informed and instructed person will not deliberately light a torch or permit one to be lighted if there is a chance of a fire. Remember too that the cutting or welding operator at

Cutting operations are responsible for majority of cutting and welding fires.





Failure to move or protect combustibles and wet down wood floor before cutting may mean fire.

CUTTING AND WELDING FIRES *Continued*

work does not have full vision. His goggles limit his sight to the point of his work, and exposure to heat from the torch dulls his possible alertness to any other fire in the immediate vicinity.

To get the operator to prevent a fire, he must be educated to anticipate it, educated to evaluate the surroundings intelligently and educated to make these things as much a regular part of his activity as turning on the torch valves before lighting up.

Professor John J. Ahern, director of the Department of Fire Protection and Safety Engineering, Illinois Institute of Technology, had this to say at the time of the International Acetylene Association meeting in 1954:

Must Reach 'Man on End of Torch'

"The education problem is probably the toughest one we have to face. Getting to the employee—the man who is using the torch—is the number one problem. There is no disregarding the fact that the welding equipment representatives and the insurance underwriters cannot get to the employees directly. They must get to them through management, through training programs in industry. And in order to accomplish that, industry must be willing to devote the time to get that message across. Unfortunately we are not reaching the man on the end of the torch."

This is no small order. To meet the continuing challenge to educate against cutting and welding fires will require the combined efforts of every safety engineer, safety supervisor and instructor—especially those in a position to work closely and regularly with the "man on the end of the torch." The teaching medium will probably depend on individual situations or choices, but none of the techniques such as safety meetings, literature distribution, film strips, new employee job indoctrination—and even oral or written examination—should be overlooked.

Some Publications Dealing with Prevention Of Cutting and Welding Fires

- "Preventing Welding and Cutting Fires," International Acetylene Association, 30 East 42nd Street, New York 17, N. Y.
 - "Preventing Welding and Cutting Fires," National Fire Protection Association, 60 Batterymarch Street, Boston 10, Mass.
 - "Cutting and Welding Fires," Factory Mutual Engineering Division, 1151 Boston-Providence Turnpike, P. O. Box 510, Norwood, Mass.
 - "Your Guide to Safety in Welding and Cutting Operations," Association of Casualty and Surety Companies, 60 John Street, New York 38, N. Y.
 - "Safety in Electric and Gas Welding and Cutting Operations," ASA-Z49.1, American Welding Society, 33 West 39th Street, New York, N. Y.
 - "Safe Practices for the Installation and Operation of Oxy-Acetylene Welding and Cutting Equipment," International Acetylene Association, 30 East 42nd Street, New York 17, N. Y.
 - "Installation and Operation of Gas Systems for Welding and Cutting," Standard 51 of National Fire Protection Association, 60 Batterymarch Street, Boston 10, Mass.
 - "Manual of Accident Prevention in Construction," Associated General Contractors of America, Munsey Bldg., Washington 4, D. C.
 - "Safe Practices for Welding and Cutting Containers that Have Held Combustibles," American Welding Society, 33 West 39th Street, New York 18, N. Y.
 - "Welding and Cutting," Chapter 29 of "Accident Prevention Manual for Industrial Operations," National Safety Council, 425 North Michigan Avenue, Chicago 11, Ill.
- Literature published by suppliers of welding and cutting equipment and gases.

Sparks are kept close in to work through use of suitable fire-resistant guards.



100,000 GALLONS A MINUTE

by William G. Ball Jr.

ONE hundred thousand gallons a minute is a lot of gasoline, but it takes this much to move the people and products of this great nation.

Since gasoline is so widely used, safety engineers should regard the safe handling of gasoline as a logical part of any overall safety program. The precepts of gasoline safety are fundamentally the same as those of many other flammable liquids and gases; only the varying characteristics of volatility, combustible limits and toxicity require individual treatment.

This article will be limited to fire and explosion hazards and fire fighting. In discussing these subjects, it is important to describe first the conditions under which a substance will ignite. With but few exceptions, such as sodium's reaction with water, there are three essential conditions necessary for combustion—oxygen (air), heat (ignition temperature), fuel (vapor)—and they must exist at the same time and place.

When an open flame is passed over pieces of wood and coal, and over beakers of kerosene and gasoline, only the gasoline ignites. The characteristic that sets all highly volatile and flammable liquids apart from other fuels is their ability to vaporize at ordinary temperatures—in fact, as low as 45 degrees below zero for gasoline. Wood, coal, and kerosene must first be heated before sufficient vapors will be liberated.

Combustible Mixtures

In the case of gasoline, however, the vapors must be mixed with air in the proper proportion. With more than six per cent of gasoline vapor in air by volume, the mixture is too rich to burn. With less than one per cent, the mixture is too lean. Even in the presence of a very high ignition temperature, gasoline vapors will not ignite when these limits are exceeded by any significant amount.

A gallon of liquid gasoline will produce about 21 cubic feet of gasoline vapor. When mixed with air in the proportion of one per cent by volume, an explosive mixture can result. In other words, only one gallon of gasoline can create an explosive mixture within a room twenty feet long, ten feet high, and ten feet wide. That is why gasoline should never be used for cleaning floors, textiles, or tools. Similarly, a gallon of gasoline evaporated into the air within a 15,000-gallon tank would make the apparently empty tank a deadly explosion hazard for anyone who attempted to weld

the tank or bring any other source of ignition within it.

Gasoline vapors are two to four times as heavy as air. They will creep long distances and collect in low places. If they encounter a source of ignition the vapors will ignite and flash back to their source, causing a fire there.

Sources of Ignition

The unsuspected sources of ignition are the most dangerous. In addition to the obvious examples such as a hot stove or the coils of an electric heater, there have been gasoline fires ignited by electric motors, electric switches and electric bells. Almost invariably, sparking occurs in the operation of these devices and unless they are designed to be vapor proof or explosion proof they can cause a fire whenever a combustible mixture is present. A broken electric light bulb can be a source of ignition for gasoline vapors (Figure 1). Once the glass is broken, the filament is exposed to oxygen and glows at a tremendous temperature for a short time before it is either melted or burned in two. And water can crack a hot light bulb.

As a source of ignition, static electricity is less obvious than switches, motors and light bulbs, but it is just as dangerous. Static electricity can be generated in the most amazing and unexpected ways. At one time it was thought that static electricity was generated by friction. Now it is known that friction in itself does not generate static electricity. Instead, it is the separation of particles—solid, liquid or gas—that creates the electrical charges.

Figure 2 shows what static can do. Merely by separating a metal disc from a piece of plastic, sufficient static electricity was generated to ignite gasoline vapors in the model tank. The resulting explosion blew the paper roof from the tank.

Wherever flammable liquids are being handled, safety engineers have to consider the possibilities of static electricity. The movement of any liquid, steam, and many gases through pipes or hoses generates static. Charges are also created when a liquid, discharged from a nozzle or pipe, breaks into droplets. Even pouring gasoline from one container to another builds up static electricity. In any continuous operation where there is movement such as in motor vehicles, tires, paper manufacturing, textile processing and in the movement of powdered materials, provision for the control of humidity or the grounding of static charges must be made if volatile combus-



William G. Ball Jr., assistant to the public relations director, Ethyl Corp. An MIT graduate, he has written a gasoline text and many articles on fuel and engine subjects.



Fig. 1—Water can break lighted bulb, cause fire in combustible atmosphere.

tibles are present in even the slightest quantity.

Even petroleum products with a high flash point can be hazardous if misused. The mere fact that a beaker of kerosene does not ignite in the presence of an open flame does not mean that kerosene is entirely safe in uses where it will be sprayed. Many paint solvents, insecticides and aerosols have characteristics similar to kerosene or gasoline. Safety precautions must be established by a qualified safety engineer for every process where liquids and solids are sprayed. And kerosene should never be thrown on a smoldering fire or used to kindle a fire in a stove. After heating the resulting vapors can cause a violent explosion.

Fire Fighting

The general principles of extinguishing flammable liquid fires should be included in any safety program. Containment should be the first thought. Once contained, fires of combustible liquids can be extinguished easily if employes have been taught to analyze the fire and to decide quickly on the best method of extinguishing it. Here again, the principles of combustion become the principles of fire fighting.

One progressive company, engaged in the manufacture of flammable liquids, taught its operating employes to analyze a wide variety of fictitious but highly probable fires. For these employes it became second nature to seek the best fire fighting methods because they had been drilled on the basic principles—"cut off the fuel," "cut off the air" or "lower the temperature of the burning substance below its ignition point." This type of training paid off when a high pressure pipeline ruptured. The flammable liquid quickly ignited from contact with a nearby electric motor. While many of the employes nearby sought to fight the fire with extinguishers, one alert employe merely closed the valve on the line. With the source of fuel cut off, the fire was soon extinguished. Figure 3 illustrates this principle.

In another instance fire broke out at the bottom of a storage tank where leakage was occurring. In this case, the product was such that it could be displaced by water,



Fig. 2—Static electricity, generated on metal plate, caused gasoline vapor in tank to explode.

so a foreman ordered water pumped into the storage tank. This displaced the flammable material from the leak until the tank could be pumped out and repaired.

Whenever leaking gasoline or similar materials can be contained by open tanks, or by temporary dikes, oxygen can be kept away by blanketing the surface with foam or, in case of small containers, by improvising a cover for them.

Although flowing water normally spreads an oil fire, water is receiving increased attention when applied in the form of fog or spray. The tiny droplets of water tend to cool the fuel vapor below its ignition temperature and the steam (water vapor) produced by the fire's heat has a smothering effect as well. Often, fog nozzle protection permits employes to approach a fire near enough to apply other fire fighting chemicals and procedures.

A Rule for Safety

In studying industrial operations, safety engineers can follow this simple rule: If it is impossible to eliminate the sources of combustible vapors, then the sources of ignition temperature must be eliminated. Similarly, if the sources of ignition temperature cannot be eliminated, vapors must be prevented from reaching them.

Gasoline can be used or stored with complete safety so long as it is handled correctly and used only for the purpose for which it was manufactured—as a motor fuel.



Fig. 3—With the fuel supply cut off, a fire at a tank vent or leak will be extinguished.

Integrating

THE HUMAN EQUATION INTO ELECTRICAL TESTING

by C. R. DeReamer and H. E. Vann

IT IS often stated that a high percentage of industrial accidents, including electrical testing accidents, are due to unsafe acts. Reams of data and reports are available which classify accidents as having resulted from poor techniques, lack of judgment, recklessness and even downright stupidity. Thus, the conclusion is made that all that needs to be done is to eliminate these unsafe acts and accidents will stop.

One of the major objectives of this paper is to demonstrate that these so-called unsafe acts in the electrical testing field may not be the fault of the electrical tester or the test engineer. Evidence exists which indicates that many so-called operator errors have been touched off by faulty design of the test equipment, poor working conditions, operating practices that expose the tester to hazards, or lack of standardization and identification which so confuses the operator that he is psychologically trapped into making mistakes.

Any discussion of electrical safety should start from the basic premise that engineering skill for controlling electricity and an exact knowledge of the effects of electricity on the human body are available. Therefore, steps can be taken to design electrical test setups that will isolate the tester from live electrical circuits or so limit the current values that the contact will not be harmful. Experience has proven that it is not enough to design the test setup just to satisfy the functional requirements of the operation. It is also necessary that the engineer include the human equation in his set of formulae, standards and specifications. If this approach is carried out in practice, fewer accidents should result, training time will be reduced, and costly changes in the test setup after it has been put in use will be eliminated. In the design of electrical test equipment and the development of test methods, certain considerations must be taken into account so there will be an adequate integration of the human factors into the functional requirements of the test; namely, standardization, identification, proper oper-



C. Russell DeReamer, consultant, safety services, General Electric, serves on three ASA sectional committees and NSC's Industrial Conference Board, has authored a number of articles on safety.



Harold E. Vann, member of AIEE, is former test engineer and safety engineer for General Electric. He recently was assigned to marine nuclear engineering in the Atomic Power Equipment Department of GE.

ating sequence, failure of equipment, circumventing safety devices and the tester's fellow employees.

STANDARDIZATION: Recognizing the necessity of providing maximum safety in electrical testing, the General Electric Company has established standards in its "Testing Safety Rule Book," maintained over a 16-year period to aid the test designer and methods man in integrating the human and functional requirements into the design of electrical test setups and to assist the first level supervisor in establishing practical safety requirements for electrical testing operations.

The standards are based on the basic principle that safety standards must implement and not impede production. The rules are hinged around two broad objectives:

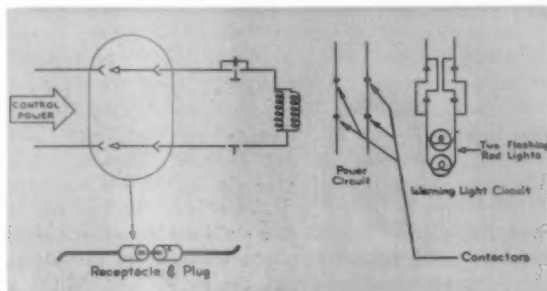
1. To isolate electrical hazards with interlocked enclosures that will automatically interrupt power when a hazard is present.
2. To design characteristics into the test equipment and safety devices that will automatically remove power and eliminate the hazard in case of an equipment failure or malfunction. These are called "fail safe" characteristics.

The influence of these two broad objectives can best be illustrated by reviewing some basic standards and the sequence in which they may be developed.

The first and most logical step in electrical testing safety is to build an enclosure around the equipment being tested that will isolate the hazard inside the enclosure so contact with a "live" electrical part can not be made from outside the enclosure. This would be sufficient if the operator always followed the proper procedure and removed power before entering the enclosure, but experience indicates a need for additional consideration.

The next step is wiring all primary power to the enclosure through a visible disconnecting device. The discon-

Fig. 1—Typical interlock circuit shows plug and receptacle and component parts of circuit.



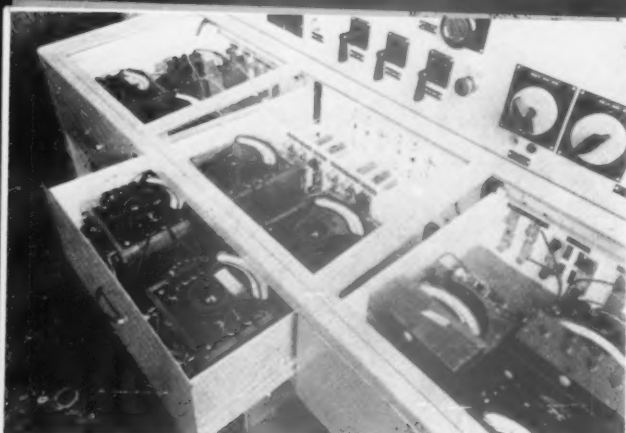


Fig. 2—Test table with interlocked meter and instrument enclosures. Circuit is automatically broken when meter terminals are exposed.

ELECTRICAL TESTING *Continued*

necting device must be arranged so that it is apparent from visual observation if the circuit is open or closed.

As a check on the disconnecting device, a single red light can be added to the enclosure to indicate when power is on and a hazard exists inside the enclosure. However, the operator's awareness soon becomes dulled to a single red light. To correct this condition a flashing red light can be substituted. But what happens if the single light burns out? Obviously the operator might be trapped into thinking power was off. By modifying the setup to include two flashing red lights in parallel this condition can be eliminated. The lights can be so installed that any malfunction of equipment or sticking of a contactor or breaker will keep the lights flashing and denote the presence of a hazard. However, unless a carefully supervised maintenance procedure for replacing burned out lights is established, and followed, the two lights will be little better than a single light.

The use of a test enclosure and flashing red lights to indicate a hazard inside the enclosure still is not sufficient because workers are sometimes likely to forget to follow normal routine. Under such circumstances they might enter the enclosure without first removing power. The next step is to add an electrical interlock across each entrance to the enclosure so the enclosure can not be entered without breaking the circuit and removing power. With this arrangement the tester automatically eliminates the hazard when he enters the test enclosure.

If an interlock is to be used as a safety device, steps must be taken to assure that failure of the device to function will not jeopardize the safety of personnel depending upon the device. To fulfill this requirement, performance standards must be established for the interlock and its control circuits. These standards include:

1. "Fail safe" features. Any failure of the interlock mechanism, loss of power, short circuit or malfunction of equipment will cause the circuit to be interrupted.
2. A visible disconnect in the primary power circuit.
3. An arrangement so it is impractical to circumvent the interlock.

An interlock circuit meeting these requirements is shown in Figure 1. Spring-activated or shorting-type interlocks do not meet the requirements.

Isolating the hazards inside an interlocked enclosure will not eliminate electrical hazards unless steps are

taken to prevent hazards from being extended outside the enclosure through meter leads and control wiring. The next step is to establish standards for auxiliary equipment used in conjunction with the test setup. Meters, gauges and exposed "live" parts should be protected with the same principles that apply to the equipment under test. A simple method for doing this is shown in Figure 2.

Integrating the so-called human element into the design of test setups and establishing test standards will provide maximum safety in testing operations. The basic principles include:

1. An adequate enclosure to isolate the hazard and accommodate the products.
2. Visible disconnecting devices to remove power from the enclosure.
3. Two flashing red lights to denote the presence of a hazard.
4. Protective interlocks that remember when humans forget.
5. Confining all conductors leaving the enclosure so that no hazard is brought out by auxiliary equipment or measuring devices.

Figure 3 illustrates some of the different types of interlocked enclosures used by the General Electric Company to test a wide variety of products ranging in size from turbine generators to toasters. Each of these enclosures meets the safety standards discussed in the preceding paragraphs, even though details vary to accommodate the product being tested.

IDENTIFICATION: Identification of controls, test enclosures, and other items where knowledge is essential for operation and safety, should be considered in test setup. It is treated separately in this paper to emphasize its value in preventing operators from becoming confused and making mistakes in judgment.

Numerous accidents have resulted from improper power plugging. Investigation of these accidents generally reveals that proper identification on the plug board may have prevented the accident. The reaction of an operator during an emergency or when performing repetitive operations should be anticipated, and allowances factored into the location and identification of controls to minimize mistakes in judgment.

Color coding can be used effectively for ready identification, such as painting controls blue and stop buttons red. Schematic diagrams can be provided on equipment where such knowledge is helpful to safe operation of the equipment. Adequate identification of controls and proper use of signs are good investments providing that the use of colors and signs are standardized and meaningful.

PROPER Operating Sequence: Even though human considerations are factored into the design and installation of electrical equipment, it may be to no avail unless steps are taken to assure proper sequence of operation. This can be illustrated by a knife switch and breaker combination in series in the same power lines. The breaker is provided to interrupt the circuit, and the switch is used to isolate or change the circuit. This is adequate if the proper sequence is followed and the breaker is opened first. Past records give vivid evidence that unless steps are taken to assure proper sequence of operation, operators will sometimes open the switch first. When a

high voltage power circuit is interrupted with a knife switch the results can be disastrous. It is a worth-while investment to mechanically interlock the knife switch to the "hold in" coil on the breaker so that the knife switch cannot be opened with the breaker in the closed position.

This approach will necessitate proper sequence of operation; however, in some cases it may not be practical, and an alternate method is needed. The alternate method would be the automatic elimination of the hazard in case of improper sequence, such as the use of an electrical interlock on the test enclosure.

The American Standards Association code for the design of a three prong plug is a good example of the steps that can be taken to assure proper sequence of operation. Users of portable electrical tools with a two-prong plug and ground "clip" are instructed to connect the ground clip first, then insert the plug. This safety precaution is frequently violated and the sequence reversed or the ground connection not made at all. Use of a three-prong ASA type plug, with the ground prong longer than the two current-carrying leads, will assure that the ground connection is made first and proper procedures followed.

Wherever possible the designer should lay out the test setup and select equipment that will assure proper operating sequence. Where this is not possible, methods should be used that will minimize the hazard when proper sequence is not followed. For example:

It is possible and quite probable that a lead connecting power from a plug board to a test may be disconnected in such a manner that one exposed end may be electrically hot. The shock hazard can be reduced by polarizing the plug so that only the male end will fit the plug board (source of power) and the female connected to the test. In case the cable is removed from the test equipment without disconnecting power, then the "live" part will be protected.

FAILURE of Equipment: Even though the functional specification for equipment is met, the user should be aware of the possibility of equipment failure and take precautions to provide adequate equipment and

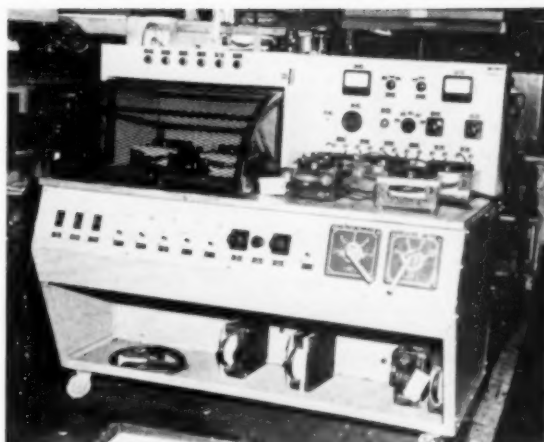


Fig. 3A—Table top test enclosure, used for testing small light equipment.

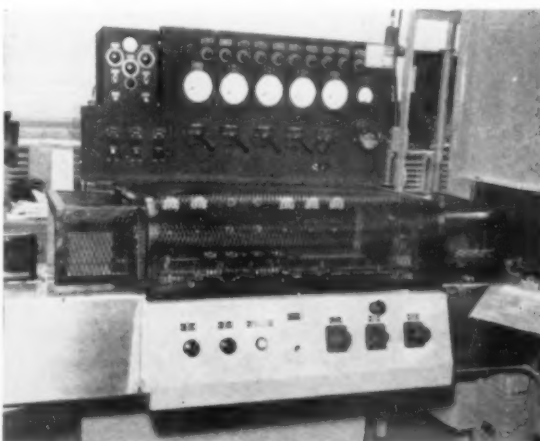


Fig. 3B—Fast conveyor line test enclosure, used for testing small equipment on fast moving conveyor line.

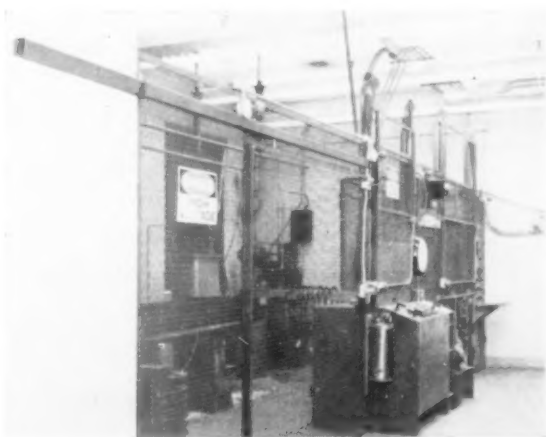


Fig. 3D—Walk-in type test enclosure, used for testing large and/or heavy equipment.

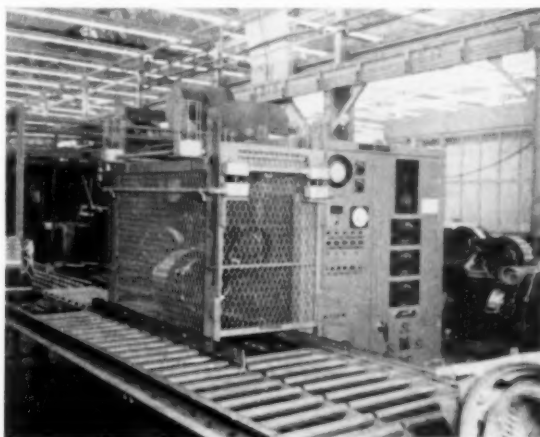


Fig. 3C—Slow conveyor line test enclosure, used for testing heavy equipment on a slow moving or manual conveyor line.

personnel protection in the event of such failure. At a minimum the following protection should be provided for electrical equipment:

1. Over-current devices that will limit the current to a value that can be safely carried by the test equipment and the product being tested.
2. Grounding non-current carrying parts to provide a path for possible fault currents.
3. Automatic circuit-interrupting devices that will disconnect power in case of a failure, such as fuses, circuit breakers or contactors.
4. Under-voltage devices, where needed, such as on the D. C. field on a motor.

It is necessary to take an additional step in cases where there is the possibility that an equipment failure will create a hazard, such as the explosion of a circuit breaker during an over-current test. This will require additional provisions to confine the potential hazard.

CIRCUMVENTING Safety Devices: An analysis of electric shock cases indicates that where it is normal practice to provide interlocked enclosures and standards as outlined in this paper, that many accidents are the result of the operator circumventing the safety device. The principal reasons for this are:

1. *Poor judgment on the part of the designer or person doing the circumventing.* A specific case in point occurred when a low-voltage test setup for testing breakers was modified for a special test. The voltage in the original test was approximately eight volts and was supplied from a fixed source. In order to accommodate a larger current for a special test, the circuit was changed to obtain 30 volts. A tester made accidental contact with the exposed part of the circuit and was electrocuted. The investigation of the accident revealed that the voltage was obtained through a variac from a 440-volt source, and though there was only 30 volts between terminals, the modification of the circuit made it possible to obtain 440 volts to ground. Lack of good judgment in the modification of this circuit and failure of the supervisor to recognize the hazard effectively built an accident into the test equipment.

2. *Inconvenience.* If the safety device is inconvenient for the operator to use, the natural tendency will be to circumvent the device. A highly repetitive operation that requires the tester mechanically to activate an interlock for each operation may create a desire on the tester's part to tie the safety device down if he is not keenly aware of the hazards. In making temporary setups, it is a temptation to eliminate or by-pass such items as electrical interlocks because of the time, trouble and expense of putting them into the circuit.

3. *Bottleneck.* If the enclosure or interlock causes a bottleneck in the production line, it will invite circumventing existing equipment or eliminating the restrictive safety device. A careful study of the method of testing will, in many cases, show that there is a better method of performing the test that is more compatible with the manufacturing operation. (For example, on some high potential testing operations it is possible to limit the test current to less than five milliamperes. Currents less

than five milliamperes are not harmful to the body and elaborate safety devices are not needed. Wherever this is possible, it will expedite the test operations, eliminate the cost of safety devices and provide adequate safety.) The designer has an obligation to study these factors and take them into consideration in the layout of the test setup. This is essential if we are to maintain a set of safety standards that will be compatible with the rapidly changing manufacturing requirements.

FELLOW EMPLOYEES: The fact that another employee could unknowingly subject the tester to a hazard should also be factored into the safety standards. To prevent a fellow employee from energizing a circuit that would subject personnel working on the equipment to injury, a tag-out procedure should be established. The General Electric Company uses a circular red tag for locking out electrical circuits that, if operated, would subject personnel to injury. It is hung on the primary disconnecting device that controls the power to the equipment. Instructions on the tag prohibit the operation of the switch until the tag is removed by the person who signed the tag.

Establishing a definite procedure to clear electrical circuits before switching power may prevent a person from unknowingly causing an accident. The procedure should require that a check list be established to notify all parties concerned of the action to be taken and the safety precautions necessary to eliminate the hazards.

A procedure should be established to prohibit a person from working alone on a hazardous test. This will assure that a person involved in an accident will have a better chance of survival. A complete set of operating procedures for each test is needed so that all parties involved will be aware of the hazards and know the safe procedure to follow to prevent exposing themselves to hazards or jeopardizing the safety of fellow employees.

CONCLUSION: There should be no fatal electrical accidents in electrical testing operations. The hazards of electricity and its effects on the human body are known and can be controlled.

Analyzing the environment in which the tester operates and his reaction to factors in this environment will provide the vital information needed to satisfy the human requirements. Integrating these human requirements with the functional requirements of the electrical testing operation will provide an equation that will eliminate electrical shock as a source of industrial fatalities.

The answer to this equation is to establish for each test setup:

1. A set of operating procedures that would, if followed, provide adequate safety.
2. A means of identifying and isolating electrical hazards, so that contact cannot be made with a "live" part.
3. Safety devices that will remember when people forget and automatically remove power when a hazard is exposed.
4. "Fail safe" characteristics of the equipment and safety devices so that failure or malfunction will automatically remove power and eliminate the hazard.

This article is condensed from a paper by the authors which was published in Electrical Engineering Magazine, March, 1956.

AMERICAN SOCIETY OF SAFETY ENGINEERS

I am a Safety Engineer. In my profession I take deep pride, but without vainglory; to it I owe solemn obligations that I am eager to fulfill

As a Safety Engineer, I will participate in none but honest enterprise. To him that has engaged my services as employer or client, I will give the utmost of performance and fidelity

When needed, my skill and knowledge shall be given without reservation for the public good. From special capacity springs the obligation to use it well in the service of humanity, and I accept the challenge that this implies.

Jealous of the high reputation of my calling, I will strive to protect the interests and the good name of any Safety Engineer that I know to be deserving; but I will not shrink, should duty dictate, from disclosing the truth regarding anyone that, by

unscrupulous act, has shown himself unworthy of the profession

Since the Age of Stone, human progress has been conditioned by the genius of my professional forbears. By them have been rendered usable to mankind Nature's vast resources of material and energy. By them have been vitalized and turned to practical account the principles of science and the revelations of technology. Except for this heritage of accumulated experience, my efforts would be feeble



I dedicate myself to the instruction of younger members of my profession in all its arts and traditions. To my Fellows, I pledge, in the same full measure I ask of them, integrity and fair dealing, tolerance and respect, and devotion to the standards and the dignity of our profession; with the consciousness, always, that our special expertness carries with it the obligation to serve humanity with complete sincerity.

AMERICAN SOCIETY OF SAFETY ENGINEERS

Membership Information

THE American Society of Safety Engineers has established the following classifications of active membership:

MEMBER—To be eligible as a Member an applicant shall be at least thirty years of age and shall be engaged in safety engineering. In addition, he shall have either an engineering or science degree in an accredited college curriculum and the equivalent of eight full years' experience in safety engineering; or he shall have had the equivalent of ten full years' experience in safety engineering.

ASSOCIATE MEMBER—To be eligible as an Associate Member an applicant shall be at least twenty-five years of age and shall be engaged in safety engineering. In addition, he shall have either an engineering or science degree in an accredited college curriculum and the equivalent of three full years' experience in safety engineering; or he shall have the equivalent of five full years' experience in safety engineering; or he shall have either an engineering or science degree in an accredited college curriculum, ten years' experience in professional engineering work and one full year's experience in safety engineering; or he shall have twenty years' experience in engineering work, of which at least ten have been at the professional level, and one full year's experience in safety engineering.

JUNIOR MEMBER—To be eligible as a Junior Member an applicant shall be at least twenty years of age and shall be engaged in safety engineering work, which if pursued the required time will tend to qualify the applicant for the grade of Associate Member. In addition, he shall have either an engineering or science degree in an accredited college curriculum or he shall have had the equivalent of one full year's experience in safety engineering.

AFFILIATE MEMBER—The Society also provides a special classification, that of Affiliate Member, for those not professionally engaged in safety engineering. To be eligible as an Affiliate Member an applicant shall be at least twenty-five years of age and shall have contributed to the advancement of safety engineering through demonstrated achievement in some related field of interest in which he has been engaged for at least three years.

for additional information write to

The American Society of Safety Engineers
425 North Michigan Avenue
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(or contact your local chapter)

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Drew, DoALL's vice-president in charge of production. "For many years we have told our customers how important the engineered use of color is on the machines we make.

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"I was pickin' pansies in Belleau Wood"



THEY WERE only a handful of dirty, haggard Marines. Paralyzed, they hugged the earth outside Lucy le Bocage as murderous German fire poured at them. And then they heard their little, middle-aged sergeant:

"Come on, you ---- . . . !"

Do you want to live forever?"

That yell, and the charge that followed, made Sergeant Dan Daly famous. But he wanted no glory. He already had *two* Medals of Honor, one earned in Peking, the other in the jungles of Haiti.

And when reporters asked about his World War I decorations, he said: "I was out in Belleau Wood pickin' pansies for my girl one day. And the officers said: 'Let's give the poor guy a medal.' Well, sir, they give me the DSC . . ."

No hero to himself, Dan Daly was a fearless and expert professional soldier—one of a breed some folks don't expect of a wealthy, peaceful land like America. Yet America's ability to produce men like Daly is a more important clue to her strength than all the gold at Fort Knox.

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Atom Conference Set For Denver, June 25-26

A NATIONAL CONFERENCE for over 400 leaders of the atomic and mining industries, the financial world, government and education will be held June 25-26 in Denver under the joint sponsorship of the Atomic Industrial Forum, Inc. and the Denver Research Institute.

Plans for the conference were announced jointly by Walker L. Cisler, president of the Forum and of the Detroit Edison Co., and by Shirley A. Johnson, Jr., Director of the Institute.

The conference, entitled "Uranium and the Atomic Industry," will for the first time bring top officials of atomic manufacturing companies and utilities to the heart of the uranium producing area for a joint conference with leaders of the mining industry.

Conference participants will hear and participate in discussions on uranium geology, exploration, development, mining and processing, and on the industrial demand for atomic energy as a source of

power, propulsion, process and space heating and radiation.

Such questions will also be explored as the economics of atomic energy utilization and the relative importance of fission, fusion, solar energy, energy from coal and energy from petroleum. Government laws and regulations will also be covered as will the importance of such related materials as thorium.

Co-sponsors of the national conference and tour are the Denver Research Institute of the University of Denver, whose 180 engineers, scientists and supporting staff are currently working on \$1,300,000 of contract research annually for industry and government, and the Atomic Industrial Forum, a national non-profit association of more than 430 industrial concerns, universities, labor organizations and research laboratories active in the atomic energy field. The Forum, headquartered in New York, sponsored the international atomic energy conference and Trade Fair held in Washington, D. C. last September.

Further information is available from the Conference Committee, Denver Research Institute, University of Denver, Denver 10, Colo.

Coffee Break Puts Pounds on Executives

COFFEE and sweet rolls at mid-morning, topped by soft drinks or candy bars in the afternoon, were named as the primary causes of overweight in nearly half the 600 executives studied recently by Rutgers University scientists.

Besides adding calories, such snacks cut down on appetite for needed vitamin-rich foods. Of the businessmen examined, 25 per cent were found to be deficient in such essentials as vitamin C, riboflavin, and thiamine.

The only certain way for a plant executive to keep his diet healthy, the experts advised, is to get three well-balanced meals a day.

Love is oceans of emotions surrounded by expanses of expenses.



A FREE KOOLPAD . . . FOR SUMMER WEEKENDS

On those blistering days this summer when chores have to be done around the house and you just don't feel like moving, reach in the drawer for your Koolpad. It won't do any miracles for you, won't lower the temperature and won't put more pep in the old bones but it will lessen the heat effect and make chores more bearable.

This cellulose sponge headband, dampened slightly and worn on your forehead, mops up perspiration and gives a delightful cooling effect. It also keeps your sun glasses or prescription glasses free from those annoying trickles of sweat.

As long as those household chores have to be done during hot summer weekends, why not make it as easy on yourself as possible?

Write in today, on your company letterhead, for your free Koolpad . . . there's no obligation.



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Dramatize Rescue of Five on Minesweeper



SAFETY CREW MEMBERS lower a "victim" to other safety men who will apply artificial respiration during a re-enactment of a mishap in the hold of a minesweeper. The open-front compartment is a mock-up of the ship's hold. "Victims" were removed through a small overhead opening.

SAFETY Department workers from The Higgins Company, New Orleans, offered an innovation in safety training at a recent Southern Safety Conference when they presented an exact re-enactment of an accident which nearly claimed five lives.

Instead of using verbal reports, the Higgins crew went through every step of the mishap in which five men had been overcome and in danger of asphyxiation in the hold of a ship.

A mock-up of the hold was made. One bulkhead was omitted for viewing by the audience. The only entry into this compartment was through a 24 x 24-in. opening at the top.

Rescue work was possible only through this opening and the

"victims" were raised through it and then carried to the front of the stage where first aid was administered. All five were revived by automatic artificial respiration before being carried off in stretchers bound for hospitals.

The re-enactment, conceived by Leon Baker, safety director for The Higgins Company, followed every step of a near-fatal accident which had occurred earlier at the company's shipyards. The staged "rescue" was complete even to the "discovery" of the unconscious men by a passerby who summoned help.

In the actual case, five employees of the Clifford King Company were laying linoleum in the forward hold of the minesweeper *USS Fidelity*. A 5-gal. can of

mastic was knocked over and went unnoticed. The adhesive mastic is composed of approximately 60 per cent toluene. Fumes quickly filled the compartment and the men fell unconscious.

A foreman passing the hold glanced through the small opening, saw the unconscious men, and called the Safety Department.

While city ambulances and emergency trucks were being summoned, Safety Director Baker and his assistant, Edward Gussman, donned Chemox oxygen breathing apparatus and went into the hold. The apparatus, manufactured by Mine Safety Appliances Company, is a self-contained breathing apparatus using a canister which absorbs exhaled carbon dioxide and generates oxygen as needed in any concentration of toxic gases or oxygen deficiency.

The two rescuers tied ropes to the five stricken men, and other workers on deck hauled them out of the small space. First aid crews arrived less than a minute after the alarm had been received. The stricken men were removed from the hold, each was wrapped in a blanket, and Pneolators were used to apply automatic artificial respiration.

Thanks to fast and effective first aid treatment, all five men had regained consciousness before being removed to hospitals. Doctors stated that only this fast action by Higgins' safety crews saved their lives. The five men, Floyd Meyers, Edwin Heehloon, Joseph Bailey, Herman LaRoca and Ines Erickson, all agree.

At the Southern Safety Conference each step of the rescue was re-enacted. Mr. Baker explained the actions as the rescue progressed.

Extremely fast response by first-aid crews in the original mishap was made possible, Mr. Baker explained, due to the Higgins safety squad system. Under this system there are 11 squads throughout the plant, all fully trained in safety measures. Each squad consists of five men and a supervisor so that trained safety men are on hand almost immediately in any emergency.



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You owe it to the life of your business to learn more about Ansul's in-plant fire training service. Get in touch with your local **ANSUL MAN** through the yellow pages of your phone directory, he will be happy to call on you and explain all of Ansul's customer services in detail. Or write to **THE ANSUL CHEMICAL COMPANY, Dept. NS-5, Marinette, Wisconsin.**





FASCINATED by the safety department's mobile picture projection unit, Indians watch film pertaining to safe living away from the reservation. The unit was used to supplement formal programs at several locations during March.



MORE THAN 300 Navajo children attend showing of Santa Fe film, "Challenge For Tomorrow," at Government school, Chinle, Ariz. Film program and balloon souvenirs were by-products of adult safety meeting presented the same day.

Navajos Learn Off-the-Job Safety

INDIANS do not practice the same safety precautions during leisure hours that they employ on the job. This disturbing fact was learned in a review of records for 1955 by the Santa Fe Railroad. These revealed a number of fatalities, the major portion resulting from traffic accidents. Of the fatalities, all but one had occurred during leisure time.

Concerned for its Navajo Indian track and maintenance employees, Santa Fe inaugurated a safety indoctrination program January 16 at the government school on the reservation at Chinle, Ariz. The record was sober proof that the Navajo, reared in the quiet of 16 million acres of mountains, desert plains and fertile valleys, needed help in gearing the tempo of his living to the pace of modern civilization.

A program designed to give the Navajos some instruction in off-the-reservation, off-the-job living was outlined by Hubbell Parker, Santa Fe system employment supervisor, with the cooperation of Paul Jones, chairman of the Navajo Tribal Council, and Mark C. Reno, the Navajo Tribe's legal adviser. The program was highly indorsed by C. R. Tucker, operating vice-president, Chicago.

In order that the families might participate, it was determined to

take the program to the reservation during the winter months when, because of inclement weather, railroad employment of Navajos is at its lowest point. Indian trader Miles Headrick of Thunderbird Ranch and Trading Post, who is also a special claims agent of the Railroad Retirement Board, spread word of the scheduled meeting.

Despite a cold, rainy day more than 200 Navajo Indians gathered for the first of the experimental programs. E. L. Duggan, system superintendent of safety, using a



E. L. DUGGAN, system safety superintendent (left), and Hubbell Parker, system employment supervisor, check locations of safety indoctrination programs scheduled for Indian employees.

Navajo interpreter, complimented the Indians on their excellent safety record on their railroad jobs and explained that the program in no way reflected on their good work record. He pointed out, however, that some of their co-workers had been killed or injured in traffic and other accidents during off-duty hours and that the program was planned to provide instructions in safety during leisure time.

Parker, widely known among Indian employees, explained through the Navajo interpreter the content of the traffic safety film, "And Then There Were Four," prior to its screening. In addition the Santa Fe safety department film, "Challenge for Tomorrow," was shown. Following the motion pictures John Wallace, field representative of the Government Relocation Service at Chinle, spoke in his native language and expressed appreciation to the officials and the Santa Fe for bringing the program to Chinle.

Helping in the presentation of the program were J. R. Decker of Los Angeles and A. M. Hanson of Topeka, both assistants to the system superintendent of safety, and C. J. Prock, safety supervisor at Winslow, Ariz. Preston M. Coston, assistant to Employment Supervisor Parker, also was active in the planning and presentation of the training session.

Three additional programs are planned for the reservation area. They are to be held at Keams Canyon, Ariz.; Crownpoint, N. M. and Ganado, Ariz.

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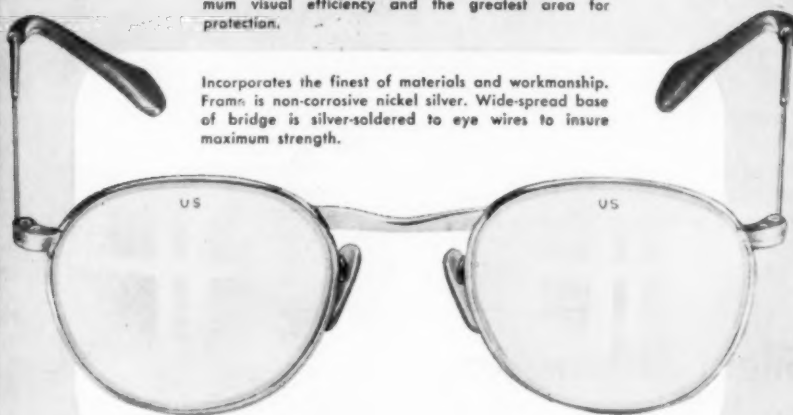


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THE ACCIDENT BAROMETER



Prepared by the Statistics Division,
National Safety Council

All Accidental Deaths

The trend of accidental deaths in January was upward compared to 1955. The fatality toll was 7,700, or 5 per cent above the total of 7,300 in January a year ago. Each class showed an increase over last year with the largest change recorded for deaths from public non-motor-vehicle accidents.

Motor-Vehicle Deaths

The motor-vehicle death total was approximately 2,960, or 5 per cent above January, 1955. It was also a 5 per cent increase over 1954.

Mileage data are not available

at this time to calculate a rate on this basis.

Of the 47 states reporting for January, 18 had fewer deaths than in 1954, 3 had the same number and 26 had more deaths. Reporting cities with populations of more than 10,000 showed an increase of 8 per cent. Of the 552 cities reporting, 89 showed decreases, 352 had no change and 111 had increases.

Regional changes from 1955 in the January death totals were:

North Atlantic	+ 9%
South Atlantic	+ 1%
North Central	+ 1%
South Central	+ 4%
Mountain	+17%
Pacific	+11%

Silent Room Aids Development of Signals



LEFT: Earl Gossweiler, Federal's director of research and product development, takes close-up decibel level reading on industrial siren in new anechoic chamber, described as the quietest room in the world. **Right:** At master control panel a laboratory assistant checks full power noise output of giant siren being tested.

HELPING the Federal Sign and Signal Corporation develop techniques and suggestions on how to select audible signals is a large, new anechoic chamber at the company's Chicago plant.

Details are given in a comprehensive bulletin, *How to Select Signals* (Bulletin 100), which presents an over-all view of signalling in industry today. It reviews the history of signalling by man, dis-

Work Accidents

There were about 1,200 deaths from work accidents in January, or 100 more than occurred in January a year ago.

The average frequency rate (disabling injuries per million man-hours) in ten sectional accident prevention contests conducted by the National Safety Council was 4.83, no change from 1955. The frequency rate for plants in community council contests was 5.51, an increase of 7 per cent over last year.

Public Deaths

The January death total for public non-motor-vehicle accidents was 1,000, or about 100 more than occurred in 1955. There were increases in deaths from burns, falls and firearms accidents and decreases in drownings and transportation accidents. Most of the increase occurred among persons 65 years and over but deaths of children 5 to 14 and persons 25 to 44 and 45 to 64 years old also were more numerous.

Home Deaths

The home accident death toll for January was 2,800, or 4 per cent above January last year. Increases occurred in deaths from mechanical suffocation, firearms accidents and burns while fatal poisonings and falls showed reductions from 1955. Aside from a decrease in deaths of persons 45 to 64 years, all age groups showed some increase over last year with the largest change recorded for children 5 to 14 years old.

cusses the basic principles of the physics of sound, and gives an analysis by experts on the right signal for the right job in industry.

Citing the three major factors in the selection of any signal, the bulletin sets forth (1) purposes signals are to serve, (2) areas to be covered, and (3) noise levels to be overcome. Also covered are the purposes of general alarms, start and dismissal, coding or paging, and danger signals for outdoor areas or indoors over large expanses of roofed-in plant space

—To page 118

Occupational skin diseases can be stopped here!



Armour Hexachlorophene Soaps destroy up to 95% of skin bacteria that spread infection—offer you the easiest, thriftiest way to protect employees!

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These Armour Soaps thoroughly cleanse the skin of irritants that cause contact dermatitis and destroy up to 95% of the skin bacteria that cause and spread infection. Only Hexachlorophene gets these results—it's the first germicidal agent ever found that stays antiseptic in soap.

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MEN of the 25th Division prepare to move forward during Hawaii maneuvers. Those with white bands on helmets are umpires or safety officers.



No Accidental Casualties in Simulated Warfare

Army accident-prevention techniques proved their worth in keeping these rugged maneuvers free from disabling injuries

By **ROBERT M. BAILEY**

THIS IS the story of a maneuver, unique in the history of the U.S. Army. It involves 8,500 officers and men, more than 61 tanks, artillery pieces, large trucks, airplanes of many types, some of the roughest terrain in the world, the Pacific Ocean, and more than 243 tons of explosives. These ingredients were mixed thoroughly last summer and fall in the Territory of Hawaii—without a disabling injury.

ROBERT M. BAILEY, is USARPAC, Safety Director, United States Army, Pacific.

When word was received, late in 1954, at Headquarters U.S. Army, Pacific, that an infantry division would be stationed at Schofield Barracks before the end of the year, some king-sized headaches were produced. Brig. Gen. John H. McGee, G-3, or Plans, Training, and Operations Officer for USARPAC, was confronted with the problem of obtaining large maneuver areas for training an infantry division on the island of Oahu.

Oahu isn't large, but it contains the bulk of the Territory's

population and almost all of its cultivated land. Consequently, there are no areas suitable for extended field exercises. After the 25th Infantry "Tropic Lightning" Division arrived from Korea, its commander, Maj. Gen. Herbert B. Powell, and Lt. Gen. Bruce C. Clarke, the Commanding General, U. S. Army, Pacific, made plans to obtain a suitable training area.

The Pohakuloa area on the "Big Island" of Hawaii was selected. It lies in the saddle between two of the largest volcanoes in the world,

Fire Hazards!



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one active and the other dormant, and contains many old lava flows and other terrain features that make it just about as rugged for a foot soldier as can be found. These lava flows are extremely rough, and the rock is so sharp that combat boots are worn out in two or three days.

Safety was built into the plans at the outset. General Clarke, in his instructions to his staff planners, emphasized that during the testing of individual infantry battalions every effort would be made to eliminate accidental losses of manpower and material.

Under General McGee's supervision, the basic plan was roughed out. Division personnel, plus the commanding officers of all infantry regiments and the field artillery units, worked on these plans.

Officers were assigned as umpires or safety officers for the exercise. Every officer was briefed on his duties, with special emphasis on those situations or events that would create hazards.

On August 3, 1955, the Pohakuloa Field Camp was activated under the command of Maj. William F. Wadsworth. He had to feed, house, and supply all troops with items not normally carried as field equipment by the individual soldier. This task included trucking all supplies needed by troops undergoing the test from Hilo, the main seaport of the island, to the camp area up a steep road that is crooked enough to break a snake's back.

Concurrently with the establishment of the field camp, other activity was taking place on Oahu. Barges were loaded with field equipment and other specialized materials for towing to Hawaii. Included in this cargo were more than 151 tons of ordnance material, small arms, mortars, artillery, pyrotechnics, demolition, rockets, and grenades.

Another unique feature of the maneuver was that combat troops were to be airlifted from Oahu to Hawaii by commercial airlines at night. Still the possibility existed that something could go wrong and a ditching would have to be made in the Pacific Ocean.

Ditching procedure classes were held. These classes demonstrated to the men that the command was

prepared to insure their safety.

Marine Corps combat aircraft were to participate in the test, so briefing sessions were held with Marine Corps personnel. Safety in its many ramifications was a principal item of discussion.

On August 15 the main show started. That night the first infantry battalion loaded its gear and personnel in trucks at Schofield Barracks and traveled the 27 miles to Honolulu International Airport. There they boarded Trans-Pacific Airline or Hawaiian Airline planes, and the two-hour flight to Lyman Field in Hilo, Hawaii, was accomplished without incident. They again boarded trucks and were transported to Pohakuloa. This movement took place at night and established the pattern for all subsequent movements.

Safety Officers Everywhere

The first two days were spent in drawing equipment, receiving the problems, and preparing for the test. The next three days were spent in the field undergoing the test. The maneuver was to the tune of the noise and confusion of the most realistic combat conditions possible. Umpires and safety officers were everywhere, watching each move with a critical eye.

Each man and organization was being tested in the art of warfare.

One phase of the test was a night combat operational problem.

Here is how the system of safety officers and umpires operated. The Chief Umpire and Chief Safety Officer, plus communication personnel and others, established the Command OP (Observation Post) on a hill overlooking the test area. Below and before them was the battalion being tested, with the various checkpoints and phase lines indicated on both the ground and the maps used.

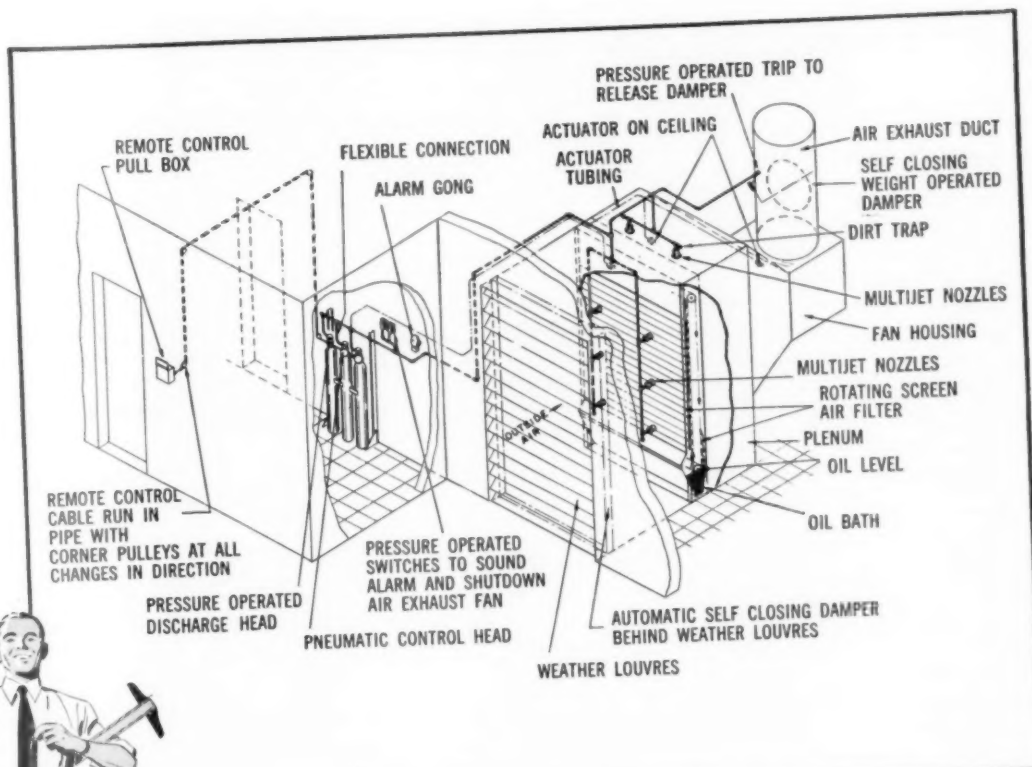
The Chief Safety Officer and Chief Umpire communicated with their troops by radio and could issue needed instructions. On a nearby hill the supporting Artillery Battalion Commander and the Artillery Safety Officer had their OP. They had a separate radio channel for communication with the Artillery Liaison Officer, Forward Observers, and the Artillery Fire Direction Center. There was a direct field telephone line between the Command OP and the Artillery Safety OP.

When the Forward Observer called the Fire Direction Center and asked for fire on a specific target, the message was monitored by the Artillery Safety OP. The Fire Direction Center would then ask for a clearance to fire the mission. If all safety factors were met, the mission would be

—To page 177



MORTAR CREW in act of firing. Lava flows and rocks wore out combat boots in two to three days and truck tires in two to three weeks.



GUARD OIL BATH AIR FILTERS WITH KIDDE ENGINEERED FIRE PROTECTION!

LOOK HERE—a fire hazard that could easily turn a building to a heap of cinders—*completely* protected by a tailor-

made Kidde CO₂ Fire Extinguishing System! Kidde engineers haven't missed a trick!

At the first sign of fire, rate-of-temperature-rise detectors trigger the system, pressure-operated switches simultaneously close dampers, shut down fans and sound an alarm while fire-killing clouds of CO₂ stop the blaze in its tracks. What protection!

And what features Kidde systems have! Using safe, efficient CO₂, they leave no mess to damage equipment, nothing to clean up after a fire. And their special rate-of-temperature-rise detectors insure *complete* protection 24 hours a day. Kidde systems need no attendance, day or night!

Kidde systems have no falling weights, use no clumsy mechanical triggering methods. Pneumatic

or Electrical Control Heads insure instant and complete CO₂ discharge. All moving parts of a Kidde system are self-enclosed for safety, need no replacement after a fire, have easy-to-read indicators which show at a glance whether system is "set" or "released." What's more, special Directional Valves let you guard more than one hazard from the same cylinder bank, giving you the most *versatile* protection on the market today!

It's easy to get the *best* in fire protection. For information about *your* specific problems, write Kidde today.

Kidde

The words "Kidde", "Lux", "Lux-O-Matic", "Fyre-Freez" and the Kidde seal are trademarks of Walter Kidde & Company, Inc.

Walter Kidde & Company, Inc.

545 Main Street, Belleville 9, N. J.

Walter Kidde & Company of Canada, Ltd., Montreal—Toronto



NATIONAL SAFETY COUNCIL

AUDITOR'S REPORT—1955

To the Board of Directors, National Safety Council:

We have examined the balance sheet of NATIONAL SAFETY COUNCIL (a Federal corporation organized not for profit) as of December 31, 1955, and the related statements of income and expenses, changes in net assets employed for the benefit of members and source and application of funds for the year then ended. Our examination was made in accordance with generally accepted auditing standards, and accordingly included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances. We had made a similar examination for the year ended December 31, 1954.

In our opinion, the accompanying balance sheet and statements of income and expenses, changes in net assets employed for the benefit of members and source and application of funds present fairly the financial position of National Safety Council as of December 31, 1955, and the excess of income over expenses and source and application of funds for the year then ended, and were prepared in conformity with generally accepted accounting principles applied on a basis consistent with that of the preceding year.

ARTHUR ANDERSEN & Co.

March 28, 1956

BALANCE SHEETS—DECEMBER 31, 1955 AND 1954

ASSETS		1955	1954	LIABILITIES		1955	1954
CURRENT ASSETS:				CURRENT LIABILITIES:			
Cash (including in 1955, \$65,174 held by Trustees)		\$ 351,942	\$ 423,244	Accounts payable		\$ 136,304	\$ 106,487
U. S. Government securities—				Accrued expenses and other liabilities		59,814	37,271
Savings bonds, at redemption value.		\$ 615,158	\$ 645,668	Deferred income—unfulfilled membership and service contracts, etc.		916,000	944,000
Treasury bonds, at cost		—	7,800	Total current liabilities		\$1,112,118	\$1,087,758
		\$ 615,158	\$ 653,468	CONTRIBUTIONS AND APPROPRIATIONS FOR			
Accounts receivable, less allowance for doubtful accounts of \$12,798 in 1955 and \$12,651 in 1954		\$ 490,649	\$ 465,695	SPECIAL PROGRAMS		119,642	112,526
Inventories, at approximate cost which is not in excess of market—				RESERVE FOR CONTINGENCIES		300,000	300,000
Publications and merchandise ...		\$ 570,720	\$ 540,744	NET ASSETS EMPLOYED FOR THE BENEFIT OF MEMBERS:			
Paper stock, printing and shipping supplies, etc.		74,027	61,455	(Per accompanying statement)		1,160,333	1,033,790
		\$ 644,747	\$ 602,199				
Prepaid expenses, etc.		\$ 99,269	\$ 69,359				
Total current assets		\$2,201,765	\$2,213,965				
FIXED ASSETS, at approximate cost:							
	Gross	Reserves					
Leasehold improvements ..	\$444,186	\$ 90,340	\$ 353,846				
Furniture and fixtures	240,435	117,577	122,858				
Printing machinery and equipment	37,026	23,402	13,624				
	\$721,647	\$231,319	\$ 490,328				
			\$ 320,109				
			\$2,692,093			\$2,692,093	\$2,534,074
			\$2,534,074				

—To page 104



B R E C K

B R E C K H A N D C L E A N E R

Breck Hand Cleaner is an efficient, heavy-duty cleaner which is non irritating and contains no abrasive materials. Breck Hand Cleaner cleans without lathering, and because of its mild yet thorough cleaning action aids in the prevention of skin irritation. About a teaspoonful of Breck Hand Cleaner is applied, without water, to the hands and arms and rubbed in well, followed by thorough rinsing. The excellent penetrating action of Breck Hand Cleaner loosens dirt, grime, and other soils and permits their easy removal in the rinse. Breck Hand Cleaner is formulated to rinse equally well in both hard and soft water. Breck Hand Cleaner has been found especially useful in helping to remove oil, grease, dirt, dust, grime, paint and other soils from the skin.

A Breck Industrial Preparations Booklet will be forwarded to you upon request.

JOHN H BRECK INC • MANUFACTURING CHEMISTS • SPRINGFIELD 3 MASSACHUSETTS
NEW YORK • CHICAGO • SAN FRANCISCO • OTTAWA CANADA

STATEMENT OF INCOME AND EXPENSES
FOR THE YEARS ENDED DECEMBER 31, 1955 AND 1954

	1955	1954
INCOME:		
Dues, publications and services	\$3,875,378	\$3,433,825
Contributions	663,313	584,081
Other income	93,158	66,853
	<u>\$4,631,849</u>	<u>\$4,084,759</u>
EXPENSES:		
Publications and materials	\$1,837,295	\$1,659,343
Technical and research	1,011,245	886,016
Administrative and general office (including depreciation and amortization of \$44,382 in 1955 and \$36,039 in 1954)	755,470	670,014
Membership, advertising and services	465,279	418,102
Publicity	165,415	167,794
Local chapter and council development	219,855	129,541
Contributive fund solicitation	50,747	60,740
	<u>\$4,505,306</u>	<u>\$3,991,550</u>
EXCESS OF INCOME OVER EXPENSES	<u>\$ 126,543</u>	<u>\$ 93,209</u>

STATEMENT OF CHANGES IN NET ASSETS
EMPLOYED FOR THE BENEFIT OF MEMBERS
FOR THE YEARS ENDED DECEMBER 31, 1955 AND 1954

BALANCE AT BEGINNING OF YEAR	\$1,033,790	\$ 970,581
ADD—Excess of income over expenses	126,543	93,209
	<u>\$1,160,333</u>	<u>\$1,063,790</u>
LESS:		
Adjustment of reserve for unfulfilled membership and service contracts for prior years	\$ —	\$ 30,000
	<u>\$ —</u>	<u>\$ 30,000</u>
BALANCE AT END OF YEAR	<u>\$1,160,333</u>	<u>\$1,033,790</u>

STATEMENT OF SOURCE AND APPLICATION OF FUNDS
FOR THE YEAR ENDED DECEMBER 31, 1955

SOURCE OF FUNDS:		
Excess of income over expenses		\$126,543
Noncash charges against income and expense (provision for depreciation and amortization)		44,382
Increase in contributions and appropriations for special purposes		7,116
		<u>\$178,041</u>
APPLICATION OF FUNDS:		
Net additions to fixed assets		214,601
DECREASE IN WORKING CAPITAL		<u>\$ 36,560</u>

you get **EXTRA STRENGTH**
with versatile

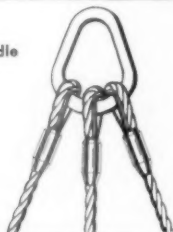


VERSATILE DURAGRIP SLINGS
CAN BE USED IN THESE AND
MANY OTHER ASSEMBLIES

2 leg bridle



3 leg bridle



4 leg bridle



thimble splice with hook

thimble splice

It's easy to see why Wickwire's Duragrip Wire Rope Slings are becoming so popular throughout industry. They're properly designed and *they are extra safe because Duragrip Splices are used!* This means splices that have 100% of the strength of the rope from which they are made . . . splices that combine the advantages of hand splices and pressed fittings to give double assurance . . . splices free of protruding wire ends which can injure workers' hands.

What's more, there are other reasons why Wickwire Duragrip Slings are so dependable. They're always made from rope and fittings with matched rated capacities . . . made by a company which completely controls its sling production from iron ore through finished sling—your best assurance of the reliability that's so important to sling users.

Next time you need slings, check with your nearby, friendly Wickwire representative. He'll be glad to give you complete details on safe, versatile Duragrip Slings.

3831



WICKWIRE
WIRE ROPE SLINGS

PRODUCT OF WICKWIRE SPENCER STEEL DIVISION
THE COLORADO FUEL AND IRON CORPORATION

THE COLORADO FUEL AND IRON CORPORATION—Ablene (Tex.) • Casper • Denver • Houston • Odessa (Tex.) • Phoenix
Salt Lake City • Tulsa
PACIFIC COAST DIVISION—Los Angeles • Oakland • Portland • San Francisco • Seattle • Spokane
WICKWIRE SPENCER STEEL DIVISION—Boston • Buffalo • Chattanooga • Chicago • Detroit • Emlenton (Pa.) • New Orleans
New York • Philadelphia



ANNOUNCING

SAFETY LEADERS OF 1955

Winners of National Safety Council's Industrial Contests

A NEW LOW frequency rate of 6.45 disabling injuries per million man-hours worked was reported for 1955 by 4,173 entrants in 17 industrial groups in which contests were held.

The combined frequency rate for winners of National Safety Council plaques was .89—approximately 14 per cent of the average rate for all contestants.

The companies listed below are those which will receive first-place plaques according to the rules of the contest in their own industry.

In the Barge and Towing Vessel, Chemical, Fertilizer, Hospital, Petroleum, Printing and Publishing, Textile, Commercial Vehicle, Glass and Ceramics, and Transit contests, first-place plaques are awarded only to the unit operating the largest number of man-hours in cases where several of

the contributors have established perfect records.

In other contests, all companies or plants with perfect records receive duplicate first-place plaques.

In addition to the contests listed here, competitions are also conducted by the Metals Section and the Meat Packing, Tanning and Leather Products Section on a fiscal year basis, July 1 to June 30.

Complete lists of all winners, plus second and third place winners and companies receiving certificates of merit for perfect records, appear in the contest bulletins which are being sent to all participating companies and plants.

Each bulletin also contains a brief analysis of experience in the industry and a coded list permitting each non-winning company to identify its own record and compare it with others.

Following are the first-place plaque winners:

AERONAUTICAL INDUSTRIES

COMPLETE AIRCRAFT MFG.

North American Aviation, Inc.,
Downey, Calif.

AIRCRAFT PARTS MFG.

Group A

Northrop Aircraft, Inc., Anaheim Div.

Group B

North American Aviation, Inc., Patrick Air Force Base, Fla.

Northrop Missile Test Facility, Northrop Aircraft, Inc., Coco, Fla.

Oliver Corp., Aviation Div., Battle Creek, Mich.

BARGE AND TOWING

Group A

United States Steel Corp., River Transportation Dept., Clairton, Pa.

Group B

Greenville Transportation Co., Inc.

CHEMICAL

DIVISION I

Group A

E. I. du Pont de Nemours & Co., Seaford Plant.

Group B

E. I. du Pont de Nemours & Co., Toledo Finishes Plant.

Group C

Canadian Industries Ltd., Central Research Laboratories.

DIVISION II

Group A

Dow Corning Corp., Midland, Mich.

Group B

Chas. Pfizer & Co., Inc., Vigo Plant and Research Center.

Group C

Spencer Chemical Co., Henderson Works.

DIVISION III

Group A

Heyden Chemical Corp., Garfield Plant.

Group B

Canadian Industries Ltd., Fabrikoid Works.

Group C

The Buckeye Cellulose Corp., Evadale, Ark.

COMMERCIAL VEHICLE

COMMON & CONTRACT CARRIERS

Group A

The Mason and Dixon Lines, Inc., Kingsport, Tenn.

Group B

F. J. Boutell Service Co., Pontiac, Mich.

LIMITED PRIVATE CARRIERS

Union Sand & Gravel Co., Spokane, Wash.

FERTILIZER

DIVISION I

Group A

Canadian Industries Ltd., Chatham Works.

Group B

Davison Chemical Co., Div. of W. R. Grace & Co., Gretna, La.

Group C

Canadian Industries Ltd., Halifax Works.

DIVISION II

Group A

Davison Chemical Co., Div. of W. R. Grace & Co., Nashville, Tenn.

Group B

Canadian Industries Ltd., Agricultural Chemical Div., Beloeil Works.

DIVISION III

Group A

Swift & Co., Plant Food Div., Norfolk, Va.

Group B

F. S. Royster Guano Co., Macon, Ga.

DIVISION IV

Smith-Douglass Co., Inc., Lakeland, Fla.

FOOD

DIVISION I

Group A

Moorman Mfg. Co., Quincy, Ill.

Group B

Gaines Div., General Foods Corp., Kankakee, Ill.

International Milling Co., Buffalo Mill.

International Milling Co., Detroit Mill.

Spartan Grain & Mill Co., Spartanburg Mill.

General Foods Corp., Corn Mill Div., Kankakee, Ill.

Pillsbury Mills, Inc., Denison, Texas.

General Mills, Inc., Flour & Feed Mill, Spokane, Wash.

—To page 157



ROCKWOOD ALL-PURPOSE FOAM can be used to blanket fires in alcohols, ethers, esters, ketones, as well as petroleum products.

Now...one FOAM extinguishes both petroleum and alcohol fires

New Rockwood All-Purpose FOAM does the work of two products. Simplifies training of fire fighting personnel and cuts down fire protection inventory. Rockwood All-Purpose FOAM quickly puts out fires in alcohols, ketones, ethers and similar water soluble materials as well as petroleum derivatives.

Rockwood All-Purpose FOAM reduces fire protection equipment for fire departments and plants which must deal with more than one type of fire hazard, and is ideally suited

for Rockwood's SpotPROTECTION or fixed piping systems.

Rockwood All-Purpose FOAM is well suited for use by municipal fire departments, oil refineries, distilleries, chemical and other industrial plants.

Rockwood All-Purpose FOAM liquid with standard Rockwood

FOAM nozzle provides the simplest, fastest means for extinguishing alcohol, solvent fires. The FOAM nozzle attaches to a hose connected to the discharge gate of a fire truck, hydrant or interior hose station.

Specify new Rockwood All-Purpose FOAM, put this versatile fire fighter to work for you.

ROCKWOOD SPRINKLER COMPANY

Engineers Water . . . to Cut Fire Losses



1 1/2" STANDARD FOAM NOZZLE AND PICK-UP TUBE discharges 60 g.p.m. at 100 p.s.i. Range: approximately 55 feet.

SEND FOR THIS INFORMATIVE BOOKLET

ROCKWOOD SPRINKLER COMPANY
Portable Fire Protection Division
1052 Harlow Street
Worcester 5, Mass.



Please send me your illustrated booklet on Rockwood fire fighting products.

Name.....

Title.....

Company.....

Street.....

City.....Zone.....State.....

INDUSTRIAL HEALTH



**Abstracts of current literature
on Occupational Hygiene, Medicine, and Nursing**
By F. A. Van Atta, Industrial Department, NSC

Physical Training

"Damaging Effects of Strenuous Exercise." *United States Armed Forces Medical Journal*. 3:369-378 (March 1956).

THE QUESTION of whether the strain of a physical testing program will produce injury in some persons has been frequently raised, but all of the previous studies appear to have been done either on college students or on patients in hospitals.

The present study was inaugurated to find the effects of stress on normal adults. The study group consisted of 107 soldiers, each of whom had had a complete physical examination including a chest X-ray, electrocardiogram, and urine analysis. Thirty-six of the men were over 30 years of age. The physical testing program consisted of the performance daily of all 5 parts of the Army physical fitness test without a pause between the various parts. Three of the men, all over 30, had to discontinue the project before the end of the 14 day program.

All of the subjects showed improvement in the ability to perform the exercises as the study progressed. About 1/5 of the subjects showed changes in the electrocardiogram, although all remained without normal limits. The time of recovery of pulse and respiration after exercise was significantly shorter in the group below 30 than in the older group. All of the serious deviations from normal were found in the older group.

The conclusion is that the physical stress of such a training program tends to bring out a latent physical defect, and this is more apt to occur in the older group since at least 40 per cent of adults are thought to be either actively or potentially suffering from high blood pressure.

Physical training programs should be modified to fit the lesser physical adults of the older group and it should be remembered that physical training can only improve skills. It cannot improve the fundamental bodily functions.

Age and Exertion

"Older People and Heavy Work." *British Journal of Industrial Medicine*. 12:309-319 (October 1955).

THE RESULT in this and previous studies indicates that it is not uncommon for the heavier jobs in industry to be carried out by the older employees. This may be in part due to the greater mechanization of the more modern operations which tend to be assigned to newer employees.

This study is based on interviews with 850 individuals on relatively light work and 1,240 on heavy jobs. One of the things which appears from the interview is that it is not the heaviness of the labor which seems to be of the greatest importance, but the necessity for speed. The older miners and molders complain of shortness of breath when required to hurry, but carry on their usual work at their own rate with no visible distress and get through about the same amount as younger men.

Where the older people have difficulty in maintaining their production they do not seem in fact for which there is more competition, but generally move toward less skilled jobs which tend to be the heavier manual labor. This tendency cannot be taken necessarily to indicate that the decline in strength is less rapid than the decline in skill, because physical measurements indicate the contrary. It may indicate only that the older people have developed more patience and more willingness to exert a maximum effort to

maintain their security of employment.

It seems likely that more is to be gained in advancing of older people by attempts to improve their skill than by attempts to find lighter work as they grow older.

At the present time a large majority of the labor force reaches late middle age with no special skill at a specialized job to improve their chances in competition with younger workers.

Absence of Silicosis Among Limestone Workers

A Report on the Absence of Pneumoconiosis Among Workers in Pure Limestone, by S. Bridge Davis and G. Nagelschmidt. *The British Journal of Industrial Medicine*, 13:6-8 (January 1956).

BECAUSE OF RECENT reports of silicosis among limestone workers after prolonged exposure to dust concentrations of stone containing five to 15 per cent quartz, a study was made of a group of fourteen men who had worked from periods of 12 to 35 years with very pure limestone. All of the limestone samples from these plants contained less than three-tenths per cent of free silica.

The dust counts in these plants were quite high, varying from 60 million to over 3,000 million particles per cubic meter. Dust concentrations in the past are not known but are likely to have been at least as high as they are at the present.

The 14 men chosen had long periods of exposure to this limestone and had had no other significant dust exposure in their working history. They were given thorough clinical examinations and 14 x 17 chest x-rays. There was no sign of accumulated dust in the lungs of any of the men and no clinical evidence of bronchitis nor any clinical or x-ray evidence of fibrosis of the lungs.

Where does Eye Safety really begin?



... with Safety Glasses that are CLEAN!

Safety glasses can't do their job and won't be worn unless you provide a handy way to keep them clean. *Sight Savers*, the genuine silicone treated tissues, are the easiest, most efficient way ever developed . . . the way already known and preferred by millions!

Thousands of Safety Directors have greatly increased the effectiveness of their programs

by installing *Sight Saver Cleaning Stations* at convenient locations throughout their plants. These compact units require very little space, are easy to install, economical to maintain.

Help the people in your plant keep their safety glasses safe. Add *Sight Saver Cleaning Stations* to your safety program now. The cost is so little . . . the job they do is so vital.

MAIL COUPON TODAY
for Distributor
Listing

FREE!

New *Sight Saver Cleaning Stations* are **FREE** with your purchase of *Sight Saver* tissues . . . so, now you can promote safety, save time and improve workmanship by putting *Sight Savers* at everyone's fingertips, with no extra cost for dispensers!

DOW CORNING
SILICONES

DOW CORNING CORPORATION, Midland, Mich., Dept. 8005-A
Please send me your listing of Safety Supply Houses handling
SIGHT SAVER Cleaning Stations.

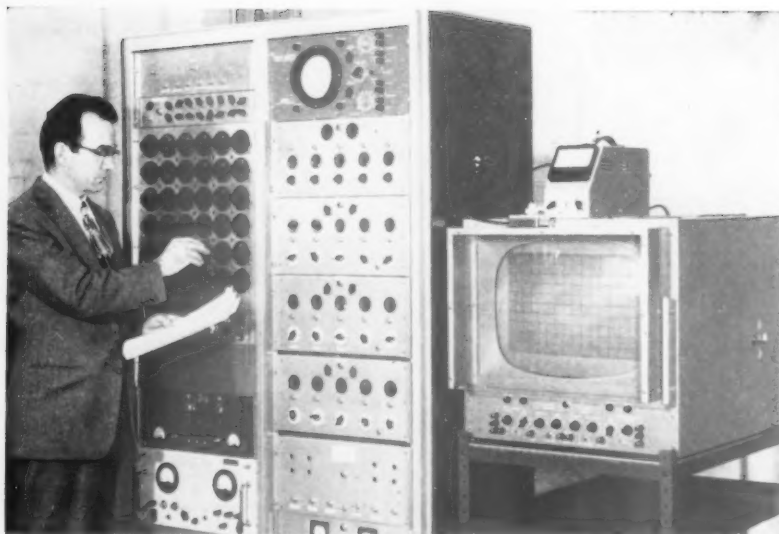
Name _____
Company _____
Address _____
City _____ Zone _____ State _____

Sight Saver Cleaning Stations

Cat. No. 67 -- (Black) } Free with
Cat. No. 68 -- (White) } purchase of
Cat. No. 69 -- (Safety } *Sight Saver*
Green) } tissues

Old style *Sight Saver* dispensers still
available at \$2.50 each.

Refill packets of *Sight Saver* tissues
for all models: Cat. No. 65 ----- \$1.45
(packet of 800 tissues)



COMPUTER PREDICTS geographic fallout pattern resulting from a nuclear explosion. Analog techniques find distribution and intensity of radioactivity on the ground after information on weather and bomb characteristics has been fed in. Fallout pattern appears on oscilloscope screen at right.

Radioactive Fallout Computer Developed by NBS

A SPECIAL-PURPOSE computer that gives the geographical fallout pattern of radioactivity resulting from a nuclear explosion has been developed by the National Bureau of Standards. Given the necessary weather data together with certain information about the bomb, this analog computer will assist in predicting what the distribution and intensity of radioactivity will be on the ground after the bomb has been detonated.

Problem solution is displayed on a cathode-ray tube, over which a map on a transparent backing can be laid. Radioactive intensity at any ground point up to 500 miles from the explosion can then be measured by the brightness at the corresponding point on the tube screen.

The computer was developed for the Weather Bureau and the Atomic Energy Commission by H. K. Skramstad and J. H. Wright of the Bureau's analog computers laboratory.

Safety is a prime consideration at the nuclear bomb testing grounds. Precautions are taken in advance of a test to prevent radioactive material from falling on inhabited areas. Such precautions require information about the bomb as well as an intimate knowledge of the weather pattern, and from these data extensive calculations determine the fallout pattern.

In the past, fallout predictions have required the laborious hand calculations of a team of mathematicians for one-half hour or more for each prediction. High-speed electronic digital computers eliminate most of the manual effort and reduce the calculation time to 15 minutes. However, these computers are usually large, permanent, and expensive installations.

To provide even faster predictions with portable, relatively inexpensive equipment, the Bureau developed a special-purpose computer that does not require highly-

trained personnel for its operation. The machine uses electronic analog techniques to complete the computation almost instantly after the data are inserted. Subsequent changes in weather data can easily be inserted into the machine as rapidly as the operator can set the appropriate knobs.

In its use at an atomic proving ground the new computer will provide the test manager with immediate knowledge of the effect of any changes in the winds. For civil defense, the computer can be used in research studies or in case of an actual attack. Forecasting could be expected to help determine and speed up the emergency procedures to be used after a bomb explosion, with a consequent saving in lives.

Panel Announces 3-Way Traffic Program

BUSINESSMEN are right in the thick of America's Fight for Life! The Business Advisory Panel of the President's Committee for Traffic Safety has developed a three-phase program to help cut traffic injury and death.

The Panel, composed of executives of some of the country's leading corporations, has decided on a sound, long-range plan of action. The purpose—to more effectively organize business leadership in the development and stimulation of traffic safety activities.

On March 6, T. S. Petersen, president, Standard Oil Company of California and a member of the President's Committee for Traffic Safety as well as its Advisory Panel, submitted the Panel's report to Harlow H. Curtice, president of General Motors and chairman of the President's Committee.

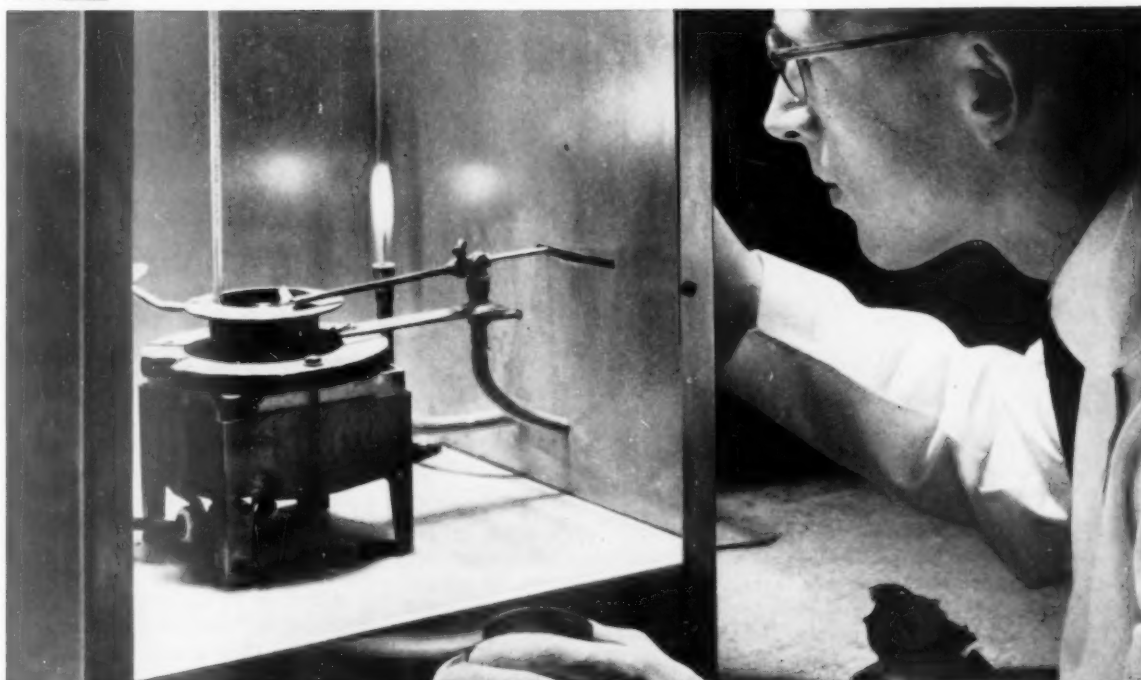
To "encourage the organization of statewide citizen traffic safety groups as a means of strengthening both state and local programs," the Panel report recommended three basic steps:

1. A plan of action be inaugurated on a pilot basis in a limited number of states—these states to be selected in consultation with the National Safety Council and other sources.

2. A procedural guide be issued



Dow . . . industry's most complete line of chlorinated solvents



CHLOROTHENE has no flash or fire point as tested by the Cleveland Open Cup Method.



Many petroleum solvents commonly used for cold cleaning have *low* fire and flash points, and present a hazard in plants.

Both all-around-the-shop and highly specialized cold solvent needs can be met more *safely*! *How?* By using versatile **CHLOROTHENE**®, the most efficient, fastest-working cold degreasing solvent you'll find in a month of Sundays. *Why?* Take another look at the pictures on this page; **CHLOROTHENE** has *no* flash or fire point.

What is it? **CHLOROTHENE** is Dow Inhibited 1, 1, 1-Trichloroethane. *Who* can use it? Any shop that cleans by spray, dip, wipe or bucket methods. Because **CHLOROTHENE** has low corrosive effects, it can be used with any common metal.

When can your Purchasing Department get this proved safety solvent? Right now! *Where?* Why, from your regular Dow distributor. He's no doubt already supplying you with such

Hold flash and fire dangers to new lows with safer, stable **CHLOROTHENE**

other stabilized, special-use solvents as **DOW TRICHLOROETHYLENE**, **PERCHLOROETHYLENE** and **METHYLENE CHLORIDE**. For more detailed information on any or all of these superior solvents, please return coupon to **THE DOW CHEMICAL COMPANY**, Midland, Michigan.

*Trademark

THE DOW CHEMICAL COMPANY, Dept. S-947F, Midland, Michigan

- ☐ Send technical information on your solvent.
☐ Who is my local Dow distributor for these solvents?

MY NAME _____ TITLE _____

COMPANY _____ ADDRESS _____

CITY _____ ZONE _____ STATE _____

you can depend on DOW SOLVENTS



Display Dramatizes Office Hazards



OFFICE ACCIDENTS are not attended by much fanfare or billing. Rarely are they dramatic or sensational as to their cause and result. More often than not, they are on the comic side.

But to the employees of the United States Naval Supply Activities, New York, Brooklyn, N.Y., office accidents are far from humorous. Navy office records reveal that the frequency of office accidents is increasing yearly. The cost to the Government is loss of production when a worker is required to remain at home as a result of an injury. The worker is part of a team, and production suffers greatly when he is disabled.

Thanks to a novel office hazard display developed by the activity's Safety Division, under the direction of Safety Supervisor William N. Reeber, employees have ac-

quired a new respect for white collar "booby traps." In an exhibit set up in the cafeteria, 30 actual accident-producing office hazards were reproduced. During the next five weeks the display created much interest and a resulting decrease in office accidents was noted.

Many employees commented that it was the first time in their office careers that they realized so many hazards could exist.

A movie, "Office Safety," shown in the cafeteria, helped emphasize how accidents can occur. A check sheet, listing the 30 hazards and headed "Keep This List," was distributed to employees.

Workers at Naval Supply Activities are now aware that their safety division is doing an important job and are convinced that accident prevention is just as vital in the office as in the plant.

for businessmen (to be ready for distribution at an early date). This would outline the steps business leaders should consider in setting up statewide citizen traffic safety groups.

3. The Panel's membership be enlarged to provide wider geographic and industry representation on which to base its program.

Calvin Fentress, Jr., president, All-state Insurance Co., is chair-

man of the Business Advisory Panel, which includes:

T. S. Petersen, president, Standard Oil Company of California and Business representative to the President's Committee; S. Bruce Black, president, Liberty Mutual Insurance Cos.; Walter F. Carey, president, Automobile Carriers, Inc.; Frank A. Christiansen, president, America Fore Insurance Group; John Cowles,

president, Minneapolis Star & Tribune; C. McDowell Davis, president, Atlantic Coast Line Railroad; Eugene Holman, chairman of the board, Standard Oil Company of New Jersey; Palmer Hoyt, publisher, The Denver Post; William F. Hufstader, vice-president, General Motors Corp.; Lee R. Jackson, president, Firestone Tire & Rubber Co.; Robert Mitchell, president, Consolidated Rock Products Co.; William S. Richardson, president, B. F. Goodrich Co.; William E. Robinson, president, Coca-Cola Co.; N. R. Sutherland, president, Pacific Gas & Electric Co.; Ben H. Wooten, president, First National Bank in Dallas, and Walker Williams, vice-president, Ford Motor Co.

In developing its recommended program, the Panel studied a number of statewide organizations, including the recently incorporated California Traffic Safety Foundation.

Alarmed by California's rapidly growing motor vehicle registration, the state's business leaders studied their traffic problems with the assistance of the National Safety Council. The urgent need for a statewide organization was apparent, and the Foundation was incorporated in January of this year. Forty-one charter members represent business and civic leadership throughout the state.

The California Traffic Safety Foundation was incorporated as an independent citizen's organization patterned after the recommendations set forth in President Eisenhower's White House Conference on Highway Safety.

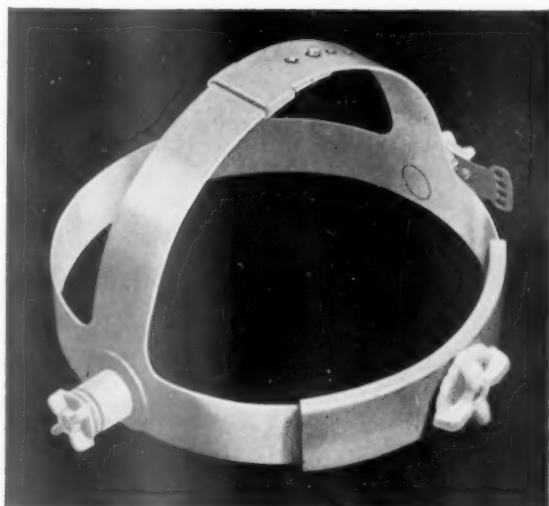
It is an autonomous, public service Foundation chartered by the National Safety Council, privately financed by California interests in answer to the White House Conference request for active business leadership in traffic accident prevention.

It's the sad truth that too often the woman who's easy on the eyes is hard on the nerves.—J. O. Jewett.

"Darling, you'd be a marvelous dancer except for two things."

"What are they, dear?"

"Your feet."



NEW All Nylon Adjust-O-Lok Headgear

Nylon, lightweight and non-conductive, lends its superior, long wearing strength to every part of this completely redesigned arc welding helmet headgear.

The large, easy to handle winged knob and the gear, both of Nylon, engage a Nylon headband to give fine adjustment to head size while helmet is worn. Headband is molded in one piece with a cross strap, *now also adjustable*, over the top of the head.

The headband adjustment is entirely enclosed in a Geon sleeve, smooth fitting against the head. A cork-lined sweatband is optional.

Jackson Leads Way with Better Helmets

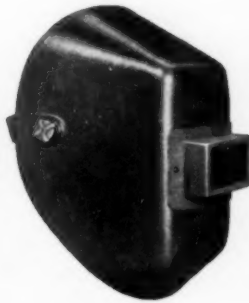
NEW Nylon Friction Pivots

All pivot parts are Nylon, except the entirely enclosed spring, so no current can pass through to the wearer's head. New winged nuts provide easier hand adjustment from the outside without taking the helmet off. A stop, located inside of the helmet shell, is attached to one of the Nylon pivots to halt the helmet's down movement, and is quickly adjusted to the exact position you may require.

NEW Straight Front Helmets with Fiber Glass Shells

To those who prefer helmets of this popular shape, JACKSON now offers a line of helmets of the same quality as its curved and narrow shell styles, with the same new features. Made of fiber glass, strong, smooth, easy to clean, resistant to heat and moisture, *they last*.

For the Best in
Arc Welding Helmets
Jackson Offers You
 $3 \times 3 \times 2 = 18$ Models
to Choose from



YOUR CHOICE OF:

3	HELMET SHELLS...	CURVED SHELL	NARROW SHELL	STRAIGHT SHELL
3	LENS HOLDERS...	PLASTIC FIXED FRONT	METAL FIXED FRONT	PLASTIC LIFT FRONT
2	HEADGEARS...	THE NEW ALL-NYLON ADJUST-O-LOK — OR THE ECONOMY HEADGEAR No. 62		
	All Lens Holders and Headgears are Interchangeable			

Made by the World's Largest Manufacturer of Arc Welding Electrode Holders, Ground Clamps and Cable Fittings, Sold World-Wide through Distributors and Dealers.

JACKSON
PRODUCTS, INC.
WARREN • MICHIGAN



LINE CLEARING WORK. Insulated power tool is used for cutting branches. Boom and crow's nests are insulated.



TELEPHONE LINEMEN are in position to check wire at remote points. Controls are operated from the crow's nests.

Greater Safety Aloft

ONE MORNING a serious break occurred in the lines of a major utility company. Minutes later, a strange-looking device, mounted on a truck, put in an appearance. A lineman climbed into a crow's nest on the device, moved control levers, and was swung aloft by unfolding aluminum booms. Another touch on the controls and he moved in next to the break. Twenty minutes later the line was back in service and the lineman, unfatigued, was safely back on the ground.

This experience is being duplicated daily by employees of tree-trimming companies, by maintenance men in industry, by telephone linemen. For these occupations, work aloft has often meant coming face-to-face with a variety of dangerous conditions.

Climbing a ladder, as statistics show, has always been risky, even when painting a one-story house. But when the ladder is high, and placed near high-tension lines as it often must be in public utility and industrial operations, falling isn't the only danger. Work must frequently be carried out in icy

or otherwise inclement weather, compounded by fatigue.

A relatively new device is helping to cut the risk. Called the Hydro Sky-Worker, it is basically a hydraulically operated boom for carrying workers aloft and maintaining them on a constant work base at any required level. It is equipped with one or two crow's nests as required, and rotates upon a turret mounted on a truck, dolly, trailer or tractor. Elevation of the booms can provide any working height up to 42 feet above the ground, while rotation of the turret through a 400-degree arc provides wide lateral reach.

The device is equipped with stabilizing outriggers, which eliminate danger of overturning and a leveling mechanism maintains the crow's nests parallel to the ground at all times. Insulation of the upper boom, plus use of laminated resin-impregnated Fiberglas for the crow's nests, provides a high degree of protection against electrical shock. Still another safety feature is the placement of power outlets in the crow's nests, permitting the use

of power tools aloft. Again fatigue is reduced.

While the uses of this aerial device in tree-trimming and utility operation are fairly obvious, a word of explanation will bring into sharper focus its function in cutting accident risks in industry. As factories get larger, overhead maintenance presents an increasing problem. Periodically, the need arises for "under-the-roof" painting, welding, and cleaning of trusses. More serious from the standpoint of safety are emergency jobs: a failure in the overhead power system, lighting fixtures burned out or the ventilating system out of order.

The aerial device can be positioned quickly. Mounted as it is on its own transportation unit, very little time elapses before it's on the scene. The needed work goes forward quickly and safely.

One question may arise in the mind of anyone observing the device at work. If a break should occur in the hydraulic lines that raise the booms and control their movements, a lock valve holds the booms in their position at the time of the break.

SAFETY TESTED!



PAX-LANO-SAV[®] HEAVY DUTY GRANULATED SKIN CLEANSER

The final safety test of any product for the skin is its actual use over an extended period of time, embracing a wide range of soils and conditions. PAX-LANO-SAV HEAVY DUTY has been safety tested and PROVEN by MILLIONS of men and women workers in thousands of plants throughout the nation for over thirty continuous years.

Imitations of this fine skin cleanser appear constantly . . . but none rival its dependable quality, its ability to get tough industrial grime off the skin fast, thor-

oughly and safely, its mildness to the skin and its extraordinary acceptance by workers.

More workers use PAX-LANO-SAV HEAVY DUTY than any other granulated or powdered skin cleanser for the use of men and women industrial workers . . . overwhelming proof, over the years, that PAX-LANO-SAV HEAVY DUTY is truly effective in washing away harmful irritants . . . yet truly gentle to the skin.

Over 72 MILLION hands are washed every day with PAX Granulated Skin Cleansers.



LOOK for the PAX ROOSTER and the PAX SEAL . . . They are trade marks used only on products of the Highest Merit.

G. H. PACKWOOD MANUFACTURING COMPANY

Manufacturing Chemists and Engineers

1553 Tower Grove Avenue

St. Louis 10, Missouri



WHAT'S NEW

IN

NATIONAL SAFETY COUNCIL SERVICES *

Operation Safety

"Slow Down and Live" is the overall emphasis of the new quarterly kits now being issued by Operation Safety beginning in June.

Henceforth the kits will be issued on a quarterly basis—summer, fall, winter and spring—and each will contain complete programming materials for three months. Hitherto Operation Safety kits were issued month by month and were focused upon a single monthly emphasis.

The issuance of the new Operation Safety program on the quarterly basis will provide greater flexibility in meeting varying community needs in terms of personnel, facilities and funds and insure a long-range program planning that will accentuate the continuity and integration so essential to a successful traffic safety campaign.

The specific objective of the June program is "Speed Control" and complete materials are provided to set up a successful community program as well as tie in with the over-all quarterly theme "Slow Down and Live."

In addition to monthly materials—spot announcements, radio scripts, newspaper releases, and

editorial—the quarterly kit for June-July-August contains a general handbook which epitomizes



NATIONAL SAFETY COUNCIL

the basics of a continuing traffic safety program together with program activities and suggestions for the year-'round.

The Planning Guide, hitherto restricted to the vital statistics of traffic accidents for the current month, now contains complete information and facts for three months and sets forth specific objectives and pertinent program ideas and suggestions for each of the three months as well as for

the over-all three-months' program.

The "Slow Down and Live" quarterly kit also contains complete materials built around monthly sub-topics as follows: July—"Vacation Driving" and August—"Share the Road" Driving."

It is the intention of the new Operation Safety program to provide a closer tie-in of the various traffic themes with an over-all theme, thus providing for a more effective community program.

For further information about the Operation Safety program, write to Bob Shinn, director, Operation Safety, National Safety Council, 425 North Michigan Ave., Chicago 11.

Sugar-Coated Safety Rules

Safety Is No Accident, a new employee training booklet, presents safety rules in an easy-to-take way. Each page is devoted to a basic rule of accident prevention and then a series of illustrations shows how and why to observe them.

And these rules are not just ones thought up by an armchair safety man. They are the carefully distilled opinion of thousands of foremen who are close to the work scene and know accidents and their causes first-hand. The rules were compiled from the thousands of entries submitted in the Ten Safety Rules contest held in the pages of the *Industrial Supervisor*, the Council's monthly magazine for foremen.

Some of the subjects covered in *Safety Is No Accident* are safe clothing and equipment, lifting and materials handling, falls, hand tools, machinery, power tools, electrical hazards, compressed air, good housekeeping, fire prevention and first aid.

Here is a handy four-color booklet that should be in the possession of every worker.



* SAFETY SENSE =
COMMON SENSE + SAFETY

* Look to this page each month for latest news about NSC services. Address requests for additional information, samples or prices to the Membership Department.

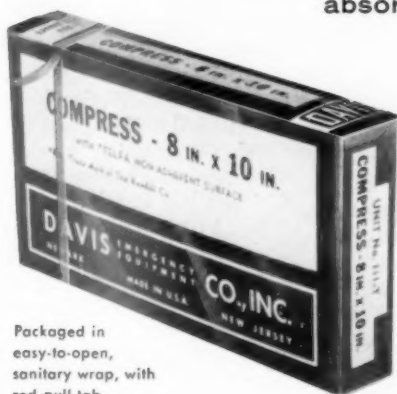
ANOTHER IMPORTANT

DAVIS "FIRST"

FOR D-CARTON FIRST AID!



Amazing new plastic-coated dressing
absorbs without sticking!



Packaged in
easy-to-open,
sanitary wrap, with
red pull-tab.

With this extraordinary new non-adherent compress we bring industry a significant contribution to first aid treatment. The Non-Adherent Compress has a thin, durable coating of finely perforated plastic bonded to a highly absorbent, non-woven, all-cotton sponge fabric. The perforations in the plastic passes drainage freely, permitting the cotton fabric to absorb it and keep the surface of the wound dry.

The compress can be removed easily, without pain, and without the need for soaking—in contrast to dry gauze, which tends to stick as threads are anchored in the discharge. The Telfa Non-Adherent Compress is a valuable addition to the Davis D-Carton First Aid system. Order now in units containing 2-inch and 4-inch Bandage Compresses and 8" x 10" compresses.

Write for Bulletin No. 327

* Reg. U.S. Pat. Off. by The Kendall Co.



DAVIS EMERGENCY EQUIPMENT CO., INC.

55 Halleck St., Newark, N. J.



For Every Safety Need

Wheeler makes a complete line of safety clothing to meet almost any conceivable requirement. Our catalog lists 675 standard items. We also can handle the design and production of custom items to meet specific needs. Contact us today for all your safety needs!

WIRE MESH ARM PROTECTOR

New ventilated arm guard for cooler wear. Made of steel or monel wire screen with plastic binding, it is ideal for such work as handling glass, steel or wood sheets, and other large stock. Easy to put on and take off. Long lasting. Can be sterilized in boiling water.



HEAVY DUTY BUTCHER'S APRON

Grain leather apron. Detachable snap-on patch in center is easily and quickly replaced. Fine grain leather belt with adjustable buckle. Ideal for meat boners and trimmers, or any job where abdominal injury is possible.



ACCESSIBLE, FAST-ACTION FIRE BLANKET CASE

Metal case, strong hinge door. Fast, easy opening. Slanted bottom... blanket rolls out quickly. Inspection window... wall brackets... fold down handle... attractive green finish. With or without blanket.



SEND FOR YOUR FREE COPY OF THE 20 PAGE WHEELER CATALOG

Full information and pictures on each and every Wheeler item. Every safety engineer will need this book!



WHEELER PROTECTIVE APPAREL, INC.

226 West Huron Street
Chicago 10, Illinois



WHEELER

"More Safety Per Dollar"

Silent Room

—From page 96

or smaller partitioned manufacturing and shop areas.

Intensity and pitch of audible signals are defined, and their application to practical problems in industry is specified for every usage from reception room, to machine shop, to the guard office in a typical up-to-date American plant.

A complete four-color diagrammatic scale-model plan of a signalling system for a plant is the heart of the bulletin. The chart is printed so that it can be framed or preserved for permanent desk reference by plant superintendents, manufacturing executives, work supervisors, safety directors, works managers, and other plant supervisory personnel.

A "Signal Selector" wheel comprises a handy guide to help select signals for specific industrial or office functions.

Goggles

—From page 54

variety of special lenses. But here there must be caution not to shut out too much light for clear perception. Lens quality and type are important.

With corrective-protective glasses, the needs for re-checking and maintenance care are particularly important. Frames get bent, spoiling alignment of lenses with pupils. Vision may be changing—a normal and not alarming development in 95 cases out of 100.

With the aid of modern science almost everyone can see adequately for his job. The better he sees the easier and safer his job is.

Burke Leaves for European Assignment

TOM A. BURKE, who last December retired as the National Safety Council's field representative for the western states, left for Europe April 5 on a five-month assignment as consultant for the International Cooperation Administration (ICA). He will continue a

program begun two years ago to stimulate interest among Western European countries in accident prevention.

Mr. Burke is the first of three consultants the ICA expects to send to Europe in the next few months to work with the European Productivity Agency in selected European industrial centers on developing safety programs and organizations to carry them out.

A member of the Council's Field Service Department for many years, Mr. Burke is former executive vice-president of the Greater New York Safety Council and at one time served as executive secretary of the Advertising Club of New York.

The current ICA activity is the third phase of an action program for decreasing the number of occupation accidents in European industry on which ICA and EPA have been cooperating since 1954.

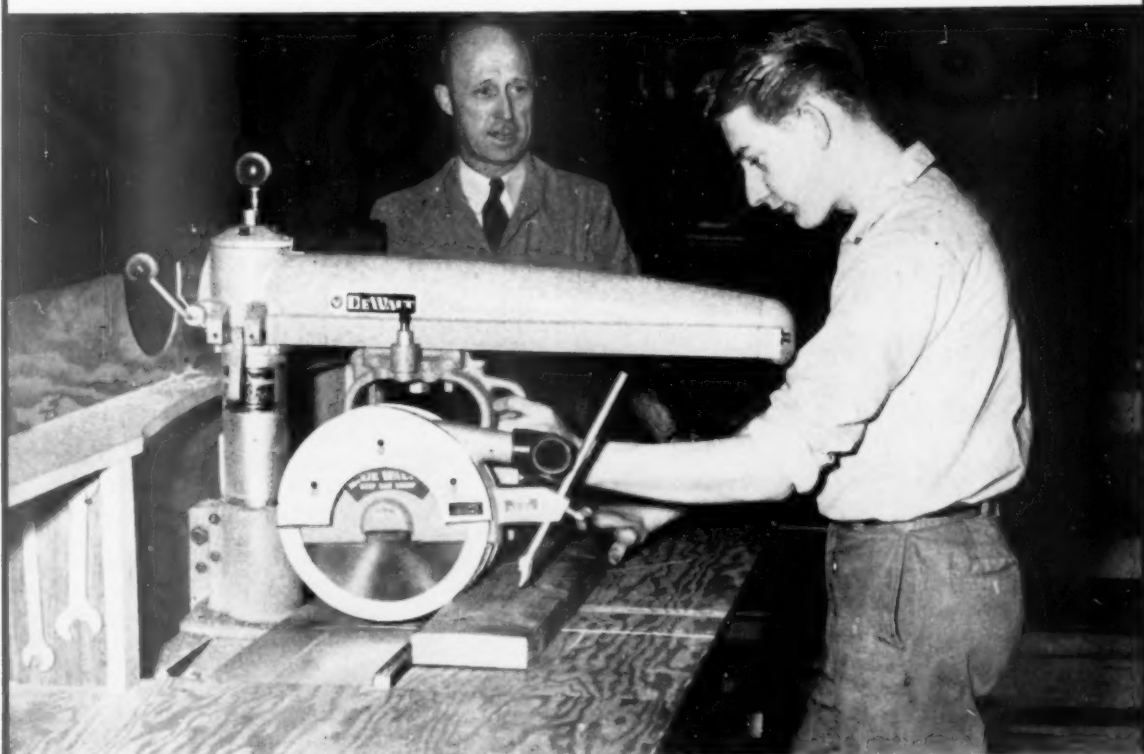
An American industrial safety consultant first went to Europe two years ago to conduct short safety training programs in selected communities and to awaken interest in the importance of accident prevention in attaining productivity goals.

Last fall 15 leading safety and training experts from Western Europe spent two months in the United States studying and observing accident prevention programs and methods in typical American industries, including mines, shipyards and railroads. These representatives from Belgium, Denmark, France, Germany, Italy, The Netherlands, Norway and the European Coal and Steel Community attended the 43rd National Safety Congress in Chicago last October.

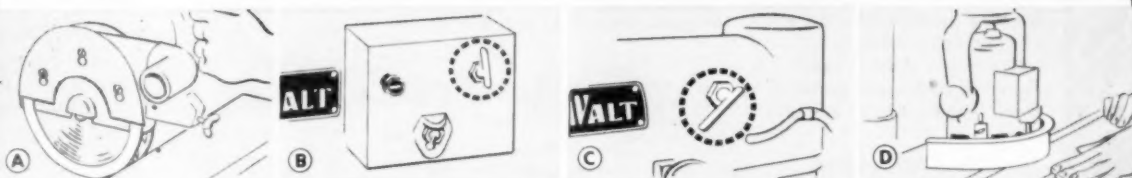
Mr. Burke will work with these and other leaders in the field to promote the formation of local and national safety councils throughout Western Europe and to organize industrial safety programs on plant and industry-wide levels.

A car air-conditioning compressor unit no larger than a football has a cooling capacity approximately equal to 24 household refrigerators.

Safe cutting starts with a safe saw...



And De Walt® has the safest record in industry!



You need these exclusive operating safety features: **A**—Simpler, safer top-side cutting, with exclusive safety guard. You always see your mark and your saw. **B**—Power brake stops saw in 4 seconds for added safety. **C**—Safety key switch prevents unauthorized use. **D**—De Walt becomes tilting arbor shaper with exclusive safety guard...gives 50% more shapes per cutter. Combines 12 basic power tools, builds into workbench...gives safer straight-line handling.

Do your plant cutting with an **AMF De Walt**—preferred in home, school, and industry for accuracy, versatility...and the *safest record of performance*. Arm raises, lowers, swings 360°. Motor and saw ride on arm, rotate 360°, tilt downward past 90°. Powerful direct-drive motor accommodates any circular tool, saves cost of

separate machines. Enjoy the efficiency and safety only a modern De Walt offers.

A wide range of sizes...from 9" to 20", ¾ hp to 10 hp...for construction, maintenance, crating, pattern shops, production lines—all industrial cutting. From just \$239 up.

See your supplier or send for **FREE BOOKLET**.



De Walt Inc., Dept. NSN-56-5, Lancaster, Pa., Subsidiary of AMERICAN MACHINE & FOUNDRY COMPANY

- ☐ Please send **FREE** Booklet on Job-Tested Safety Cutting Methods
☐ Send information on **FREE** 16mm sound film (23 min.)

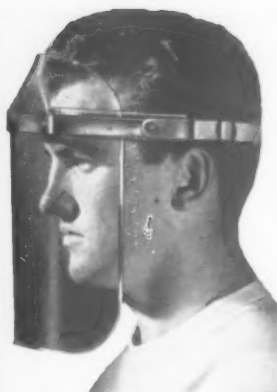
Name _____

School _____

Address _____

City _____ Zone _____ State _____





Full eye, face and forehead protection plus full working freedom

Protect against sparks, hot or molten metal and fragments without obstructing vision or working freedom. Transparent visor is fog resistant, non-inflammable. Leather sweat band, all rubber headband. Three lengths, 4", 6" and 8" (shown)

Write for bulletin & prices



B-F-McDonald
COMPANY

Manufacturers & Distributors of
Industrial Safety Clothing & Equipment



5721 West 96th St., Los Angeles 45
Other Offices in San Francisco and Houston

Correction

The table below shows the correct schedule of charges for measuring the disability of work injuries, as contained in the 1954 revision of ASA Standard Z16.1, The American Standard Method of Recording and Measuring Work Injury Experience.

The March issue of NATIONAL SAFETY NEWS inadvertently showed an outdated schedule of charges, which should no longer be used.

SCHEDULED CHARGES

A. FOR LOSS OF MEMBER—TRAUMATIC OR SURGICAL

Fingers, Thumb, and Hand

Amputation Involving All or Part of Bone**

	Thumb	Fingers			
		Index	Middle	Ring	Little
Distal phalange	300	100	75	60	50
Middle phalange	200	150	120	100	100
Proximal phalange	600	400	300	240	200
Metacarpal	900	600	500	450	400

Hand at wrist.....3000

Toe, Foot, and Ankle

Amputation Involving All or Part of Bone**	Great Toe	Each of Other Toes
Distal phalange	150	35
Middle phalange	200	75
Proximal phalange	300	150
Metatarsal	600	350

Foot at ankle.....2400

Arm

Any point above*** elbow, including shoulder joint	4500
Any point above wrist and at or below elbow	3600

Leg

Any point above*** knee	4500
Any point above ankle and at or below knee	3000

B. IMPAIRMENT OF FUNCTION

One eye (loss of sight), whether or not there is sight in the other eye..	1800
Both eyes (loss of sight), in one accident	6000
One ear (complete industrial loss of hearing), whether or not there is hearing in the other ear..	600
Both ears (complete industrial loss of hearing), in one accident.	3000
Unrepaired hernia (for repaired hernia, use actual days lost)	50

**If the bone is not involved, use actual days lost, and classify as temporary total disability.

***The term "above" when applied to the arm means toward the shoulder, and when applied to the leg means toward the hip.

Fires and Gun Accidents Cut by 'Red Hat' Campaign

LAUNCHED in Oregon last fall as a state-wide educational campaign to improve relations between hunters and landowners, "Red Hat Day" produced im-

portant fire prevention and safety results.

In a report to Oregon Governor Elmo Smith, the Red Hat Day committee indicated that of the 20 million acres protected by the Bureau of Land Management, there was only one hunter-caused fire in 1955 compared with three in 1954. Fires caused by smokers, debris burners, and incendiaries were reduced by more than half.

Other highlights of the report:

- The State Department of Agriculture asserted that only four domestic animals were shot and that gunfire injury to farm animals was the smallest for any similar period on record.
- The Oregon Game Commission announced a drop in hunter firearm fatalities from 13 in 1954 to 10 last year in spite of greater numbers of sportsmen afield.
- The Industrial Forestry Association stated that two out of three of its 45 tree farm owners believed that hunter conduct improved during 1955.
- The State Forestry Department reported a new record low for the number of forest fires on state land during the recent deer hunting season.

Red Hat Day Chairman L. C. Jack Binford concluded, "The program has demonstrated that it has public appeal, and an excellent start has been made in paving the way for a continuation of this type of education program in future years."

As a cooperative effort, it was unique in the field of outdoor recreation. The campaign and its results gained nation-wide attention and similar ventures are now being planned by sportsmen and landowners of other states.

At the public library, a small boy presented a well-worn dirty volume at the return desk. The librarian glanced at the book, leaned forward to take in the size of the boy, and then remarked: "This is rather technical, isn't it?"

Planting his feet firmly on the floor, the boy, half defiant, half apologetic, said: "It was that way when I got it."

Don't give
Fire
a break



Keep hazardous locations safe
with *Ampco*^{*} *Safety Tools*

HOW TO CHOOSE SAFETY TOOLS

For tools subject to impact and/or torque
— specify Ampco Metal.

For tools that have cutting edges or
gripping teeth — specify Ampco
Beryllium Copper Tools.

For tools to be used in the vicinity
of acetylene or similar gases—spec-
ify Ampco Monel[†] Tools.



[†]T. M. International Nickel Co.

Any time one of your workers enters a hazardous location with an ordinary tool, he is literally playing with fire. That's why every job in your plant that must be performed in the vicinity of inflammable or explosive liquids, dusts or vapors, calls for Ampco Safety Tools.

Ampco tools can't emit dangerous hot sparks. That's the reason Factory Mutual Laboratories and other safety authorities approve and recommend them for use everywhere a dangerous fire might start easily.

The Ampco Safety Tool line is the industry's most complete — you select what you need from more than 400 items. Order Ampco today.



Sole producer of
genuine Ampco Metal

AMPCO METAL, INC.

Dept. NS-3 • Milwaukee 46, Wisconsin
West Coast Plant • Burbank, California
In Canada . . . it's Safety Supply Co.,
Toronto, Ontario

^{*}Reg. U. S. Pat. Off.

T-14



**ONLY Fyr-Fyter
GIVES YOU
MORE PROTECTION AGAINST
FLAMMABLE LIQUID FIRES
with this DENSE 60° WIDE ANGLE STREAM**

This dense, flame-smothering, heat-shielding blanket of chemical powder is expelled from Fyr-Fyter's Dry Chemical Extinguisher by the sure force of "sealed-in-power!"

A specially designed diffuser, built into the nozzle, spreads the fire-killing powder in a flat, dense 60° wide angle stream which covers a wide area to envelop and blanket flames faster! This provides more protection against fires in gasoline, petroleum products, paint, varnish, lacquer, turpentine, alcohol, butane, propane, and chemical fires . . . and also hazardous electrical fires! For a longer range stream, the diffuser can be easily removed.

Fyr-Fyter's Dry Chemical Extinguishers are approved by Underwriters' Laboratories.

GET ALL THE FACTS . . .

**CALL A FYR-FYTER REPRESENTATIVE OR
WRITE FOR COMPLETE INFORMATION TODAY!**

FF-11

The Fyr-Fyter Co.
(FIRE) (FIGHTER)

221 CRANE STREET, DAYTON 1, OHIO

REPRESENTATIVES IN PRINCIPAL CITIES

OUR 40th YEAR OF MANUFACTURING . . . THE MOST COMPLETE LINE IN INDUSTRY

BRANCH OFFICES: NEW YORK, BOSTON, PHILADELPHIA, CHICAGO, ATLANTA, DALLAS, SAN FRANCISCO, LOS ANGELES, PORTLAND, SEATTLE.



For a More Successful Poster Program



JUMBO POSTER, FOR JULY, 1956

The Jumbo poster, issued monthly, is designed for outdoor use and is available to members on annual subscription but is not stocked. Its actual size is 9' 11" by 11' 8".

SAFETY BANNER FOR JULY, 1956

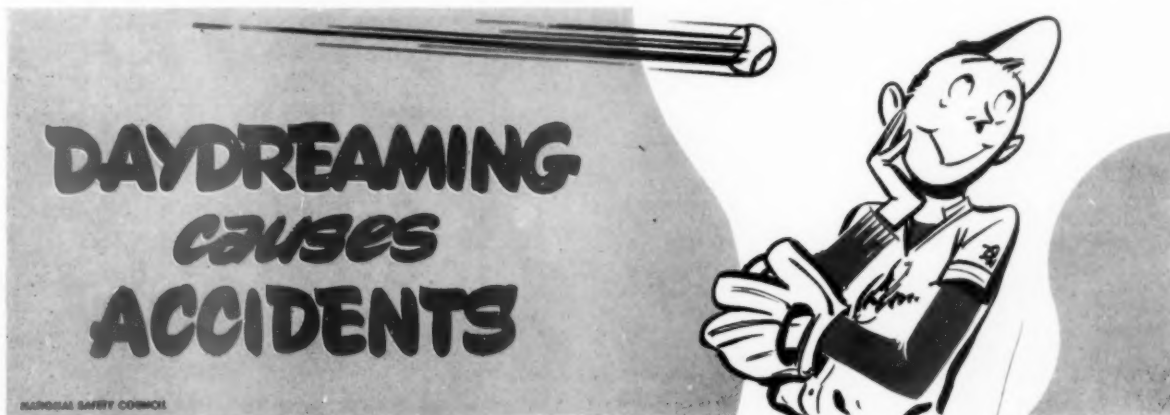
Here is the attention-getting, monthly cloth banner. Available in two types—indoor and outdoor—both are identical in size (10 feet long by 40 inches high), have the same general message and multi-color design. Indoor type is of sturdy drill with grommets for easy hanging, while the outdoor banner is of extra heavy drill, with wind vents, and has strong stitched-in rope for durability.



0650-A

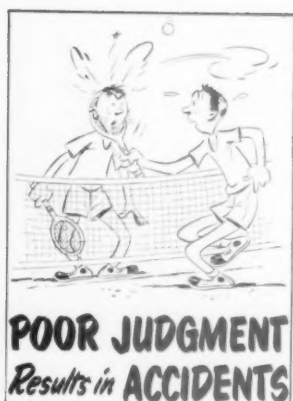
8½x11½

This new four color poster is illustrative of the 72 four color posters shown in the 1956 Poster Directory.



Electrotypes of poster miniatures on this page are not available; nor are payroll inserts be supplied.

Posters below are printed in two or more colors
(Available only in sizes indicated)



0808-C

25x38



0777-B

17x23



NATIONAL SAFETY COUNCIL

0727-A

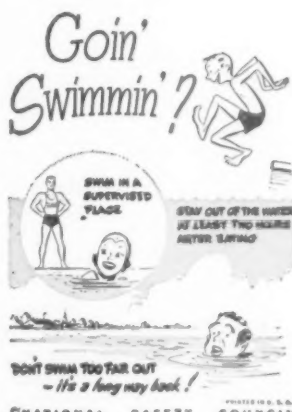
POSTER IN U.S.A. COUNCIL

8½x11½



0762-A

8½x11½



0773-A

8½x11½



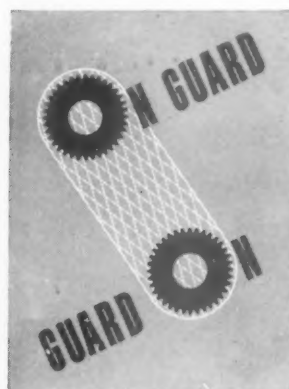
0534-B

17x23



0719-B

17x23



0553-A

8½x11½



0618-A

8½x11½

Electrotypes of payroll inserts can be furnished in all poster illustrations shown above.

Posters below are printed in two or more colors
(Available only in sizes indicated)



NATIONAL SAFETY COUNCIL
0734-B 17x23



PRINTED IN U.S.A.
© NATIONAL SAFETY COUNCIL
0747-A 8½x11½



NATIONAL SAFETY COUNCIL
0518-A 8½x11½



NATIONAL SAFETY COUNCIL
T-0728-C 25x38
T-0729-A 8½x11½



NATIONAL SAFETY COUNCIL
T-0730-B 17x23



NATIONAL SAFETY COUNCIL
V-0758-A 8½x11½



NATIONAL SAFETY COUNCIL
V-0756-B 17x23



NATIONAL SAFETY COUNCIL
V-0755-B 17x23



NATIONAL SAFETY COUNCIL
V-0757-A 8½x11½

Electrotypes of payroll inserts can be furnished in all poster illustrations shown above.

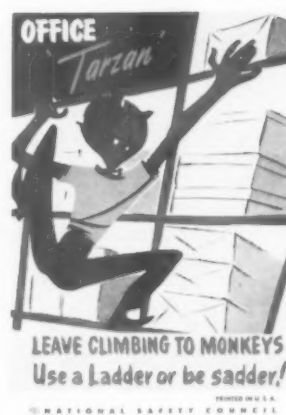
Posters below are printed in two or more colors
(Available only in sizes indicated)



OFFICE 1-1A 8½x11½



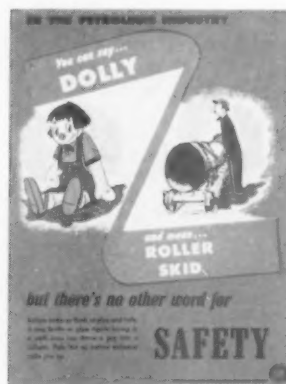
OFFICE 1-10A 8½x11½



OFFICE 1-3A 8½x11½



PTR 1-8A 8½x11½



PTR 1-7A 8½x11½



PTR 1-6A 8½x11½



MRN 1-2A 8½x11½



MRN 1-6A 8½x11½



MRN 1-5A 8½x11½

Electrotypes of payroll inserts can be furnished in all poster illustrations shown above.

COMING EVENTS



*in the
safety field*

May 2-4, Charlotte, N.C.

Twenty-sixth Annual North Carolina Statewide Industrial Safety Conference (Charlotte Hotel). H. S. Baucom, director of safety, North Carolina Industrial Commission, Raleigh, N.C.

May 7-9, Allentown, Bethlehem, Easton, Pa.

Twenty-ninth Annual Eastern Pennsylvania Safety Conference. Harold A. Seward, secretary-treasurer, Lehigh Valley Safety Council, 602 E. Third St., Bethlehem, Pa.

May 10-11, Baltimore, Md.

Governor's Safety-Health Conference and Exhibit (Lord Baltimore Hotel). Joseph A. Haller, executive director, Department of Labor and Industry, State of Maryland, 12 East Mulberry St., Baltimore 2, Md.

May 14-16, Washington, D. C.

Fifth President's Conference on Occupational Safety. Paul E. Gurske, director, Bureau of Labor Standards, U. S. Department of Labor, Washington 25, D. C.

May 17-18, Duluth, Minn.

Thirty-second Annual Conference, Lake Superior Mines Safety Council (Hotel Duluth). John A. Johnson, secretary, c/o U. S. Bureau of Mines, Federal Bldg., Duluth 2, Minn.

May 17-18, Toronto, Ont.

Annual Conference, Mines Safety Association of Ontario (Royal York Hotel). C. Gibson, safety director, Mines Safety Assn. of Ontario, 67 Pine St. South, Timmins, Ont.

May 22-23, Louisville, Ky.

Ninth Kentucky Statewide Safety Conference and Exhibit (Kentucky Hotel). Louisville Safety Council, Speed Bldg., Louisville 2, Ky.

May 22-24, Rochester, N.Y.

First Genesee Valley Safety Conference and Exposition. Sponsored by Rochester Safety Council; Genesee Valley Chapter, ASSE, and Industrial Management Council of Rochester. William H. Keeler, sec-

retary-treasurer, Genesee Valley Safety Conference, Inc., 55 St. Paul St., Rochester 4, N.Y.

May 23, Allentown, Pa.

Second Annual Banquet of the Lehigh Valley Industrial Nurses' Association. Harold A. Seward, secretary-treasurer, Lehigh Valley Safety Council, 602 East 3rd St., Bethlehem, Pa.

May 24-26, Roanoke, Va.

Virginia Safety Association Annual Conference (Hotel Roanoke). James T. Wadkins, manager, Virginia Safety Association, 2501 Monument Ave., Richmond 20, Va.

June 4-8, Boston

Sixtieth Annual Meeting, National Fire Protection Assn. (Hotel Statler). Robert W. Schuette, manager, Public Relations, NFPA, 60 Battery-march St., Boston 10.

June 5-6, Hartford, Conn.

Eleventh Annual Conference of the Connecticut Safety Society (Hotel Statler). Stephen J. Pollock, Jr., manager, c/o Remington Arms Co., Inc., 939 Barnum Ave., Bridgeport, Conn.

June 6-8, Peoria, Ill.

Thirty-third Annual Safety and Fire Protection Conference, Greater Chicago Safety Council (Pere Marquette Hotel). Joseph F. Stech, Secretary-treasurer, Greater Chicago Safety Council, 10 North Clark St., Chicago 10.

June 19-21, Harrisburg, Pa.

Pennsylvania Department of Labor and Industry Annual Industrial and Occupational Safety Conference (Zembo Mosque). Frank K. Boal, chairman, c/o Department of Labor and Industry, Harrisburg, Pa.

Sept. 13-14, York Harbor, Me.

Twenty-ninth Annual Maine State Safety Conference (Marshall House). Arthur F. Minchin, secretary, Department of Labor and Industry, State House, Augusta, Me.

Sept. 17-19, Cleveland, Ohio.

Eighteenth Annual Ohio State Safety Conference and Exhibit (Hotel Carter). H. G. Hayes, secretary-treasurer, Suite 514, 2073 East Ninth St., Cleveland 15, Ohio.

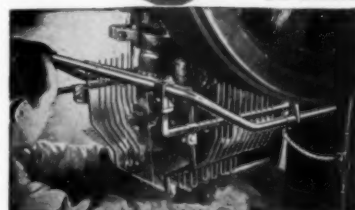
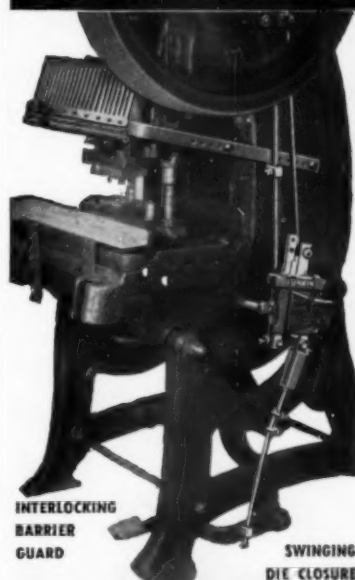
Oct. 22-26, Chicago

Forty-fourth National Safety Congress and Exposition (Conrad Hilton Hotel). R. L. Forney, secretary, National Safety Council, 425 N. Michigan Ave., Chicago 11.

Nov. 8-9, Columbia, S.C.

Nineteenth Annual Accident-Prevention Conference (Hotel Jefferson). J. D. Watson, Jr., safety

JUNKIN SAFETY GUARDS



Your SUREST Protection Against Press Accidents

JUNKIN safety guards prevent press accidents, afford maximum protection, increase press production, lower insurance costs and generally improve plant morale. Make an investment in safety now and investigate Junkin Safety Guards for primary and secondary punch press operations. Write for free catalog "The Key to Protection".



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and protection
that lasts!
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Neoprene
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Wherever personnel safety can be threatened by the lack of adequate protection from greases, oils, water, most acids and chemicals, that's where TOWER'S extra protective Clothing belongs. These comfortable, designed-to-fit garments are made of strong, impregnated fabric and are coated inside and out with hazard-resistant Neoprene Latex. Coats, jackets, overalls, hooded shirts, hats and aprons . . . for every industrial use. For complete information mail coupon today, or if you have a particular problem, let us know and we'll solve it quickly with the garment best suited to your needs.

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Rubber
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Clothing



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A Division of Sawyer-Tower, Inc.
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engineer, South Carolina Industrial Commission, P. O. Box 539, Columbia, S.C.

White House Conference

The following regional meetings on highway safety have been scheduled. For information, contact J. W. Bethea, The President's Committee for Traffic Safety, General Services Building, Washington 25, D.C.

May 1-2, Atlantic City, N.J.

Eastern Regional Conference (Hotels Ambassador, Ritz, Chelsea). Training Conference for staff—April 29 and 30.

May 14-15, Miami Beach, Fla.

Southern Regional Conference (Hotels Saxony, Sans Souci, Sea Isle, Seville). Training Conference for staff—May 13.

May 23-24, Chicago

Midwest Regional Conference (Hotel Sherman). Training Conference for staff—May 22.

June 1-2, San Francisco

Western Regional Conference (Sheraton-Palace Hotel). Training Conference for staff—May 31.

Wisconsin Conferences

May 10—Fox River Valley and Lakeshore, Appleton.

May 11—Foreman's Safety School, Milwaukee.

May 17—Rock River Valley Safety Conference, Beloit.

May 24—Southeast Lakeshore, Burlington.

June 1—Foreman's Safety School, Milwaukee.

June 8—Northwest Regional, Ashland.

June 12—Wisconsin River Valley, Merrill.

For information about Wisconsin Conferences and safety schools write R. W. Gillette, executive secretary-treasurer, Wisconsin Council of Safety, 1 W. Wilson St., Madison 2, Wis.

**NSC Industrial Department
Sectional Executive Committee
Meetings**

May 15, Washington, D.C.

Public Employee Section, U.S. Department of Labor, Bureau of Labor Standards Building.

May 15, Washington, D.C.

Glass and Ceramics Section.

May 16, Washington, D.C.

Rubber Section, Veto Room, Hotel Congressional.

May 16, Washington, D.C.

Textile Section, Statler Hotel.

May 16-17, Washington, D.C.

Food Section, Hotel Manger Annapolis.

May 17-18, Baltimore, Md.

Automotive and Machine Shop Section, Lord Baltimore Hotel.

May 17-18, Washington, D.C.

Printing and Publishing Section, Government Printing Office.

May 17-18, Baltimore, Md.

Power Press and Forging Section, Lord Baltimore Hotel.

May 18, Washington, D.C.

Chemical Section, U.S. Public Health Service Buildings.

May 19-20-21, Rochester, N.Y.

Pulp and Paper Section, Seneca Hotel.

May 22-23, Allentown, Pa.

Cement and Quarry Section, Hotel Traylor.

May 24-25, Nashville, Tenn.

Meat Packing, Tanning and Leather Products Section, General Shoe Bldg. of General Shoe Corporation.

May 28-29, Toronto, Canada.

Public Utilities Section, Royal York Hotel.

June 5, Boston, Mass.

Air Transport Section, Logan International Airport.

June 8, Wausau, Wis.

Occupational Health Nursing Section, Employers Mutual of Wausau Insurance Company.

June 9-10, Roanoke, Va.

Fertilizer Section, Roanoke Hotel.

June 18, Louisville, Ky.

Railroad Section, Brown Hotel.

June 25-26, Dallas, Texas.

Construction Section, Statler Hilton Hotel.

An irate chief engineer was inspecting a stretch of newly built road, accompanied by the foreman in charge of the gang. He pointed out to the bewildered foreman that the shoulder beds were off, the curves banked wrong, the foundation not right, the leveling was far from perfect.

Finally, after the avalanche of criticism, the old foreman spat on the ground, gave his superior a blank look and asked: "Well, how is it for length?"

There's a little bit of Wausau in the new spirit of St. Louis

A WAUSAU STORY

by MARTIN L. DUGGAN
News Editor, St. Louis Globe-Democrat

"Wausau." It's an unusual name. It caught my eye in a magazine ad that asked: 'How come one of the world's most important insurance companies is located in Wausau, Wisconsin?'

"If you read that first Wausau story you discovered how a warm and refreshing way of doing business in that fishing and hunting country made business friends all over the country. And how Employers Mutuals of Wausau

became known as 'good people to do business with.'

"Now, of course, the Wausau story goes across the country. A little bit of Wausau has found its way into the life of cities in all 48 states. It's a human interest news story that I'm reporting here as I found it in talks with Employers Mutuals men and women and their policyholders in St. Louis. Being interested in my city I'm happy to see a little bit of Wausau in the new spirit of St. Louis."



"How far can you go for a policyholder? When one of his policyholders, an electric power company, mentioned that they were having trouble inspecting some rather inaccessible rural power lines for liability hazards, Bob Musser had the answer. Inspect the whole set-up by air. Because Bob happens to be a pilot, he offered to take up the company manager on the first flying inspection trip. They flew up and down the lines spotting fire dangers and other liability hazards. I'd say this was going out of your way to give some mighty good personal service. It's the Wausau way."



"He was like a member of our own company," Mr. J. E. Latta (right), said of Roy Wennemann (left), the Employers Mutuals' safety engineer. Roy worked with Mr. Latta's construction company during the building of the unique new 5½ million St. Louis Airport Terminal building. With soaring domes vaulting a great glass enclosed area, this building presented many new concepts in construction

and in safety. Wennemann helped plan this accident prevention program right from the blueprint stage. Said Mr. Latta: 'The conscientious work of the Employers Mutuals' representative encouraged my men to be more careful.' I found in talking to Bob Helberg, St. Louis branch manager, that it is this kind of accident prevention program that means lower cost to policyholders."



"Home for Christmas — the Wausau way. Employers Mutuals' Nurse Cora Snodell sees that paraplegic patient Aaron Simons gets home to his folks in Minneapolis for Christmas. Aaron was hurt on a job covered by an Employers Mutuals' workmen's compensation policy. But Employers Mutuals' interest in him goes far beyond providing him with the best physical care. I learned the Wausau way is to go all the way in giving unexcelled service on claims."

Employers Mutuals, with offices in 90 cities, writes all lines of fire and casualty insurance. We are one of the largest in the field of workmen's compensation. For further information see your nearest representative or call us in Wisconsin on our special line, Wausau 2-1112.

Employers Mutuals of Wausau



"Good people to do
business with"



ATTENDING the Western Pennsylvania Safety Council's Spring Conference in Pittsburgh, April 10-12, were more than 850 banquet guests.



RIGHT: Irene E. McDermott, director, Home Economics Education, Pittsburgh Public Schools, discussing "Emergency Feeding in Event of Atomic Attack." Nuns are from the Pittsburgh Diocese Catholic schools.

Pittsburgh Conference Attracts 3,000

MORE than 3,000 persons attended the 31st annual Safety Conference and Exhibit of the Western Pennsylvania Safety Council in Hotel William Penn, Pittsburgh, on April 10-12. The conference was the largest safety gathering to be held in Western Pennsylvania.

Practically every aspect of safety—from civil defense to the kitchen—was included in the three-day conference.

A special feature was the 40 safety exhibits, which showed new methods of protection against old hazards and devices for protection against the new hazards.

Dr. Charles E. Irvin, professor of speech and communication skills at Michigan State University, gave the "Early Bird" talks at 8:30 each morning.

Dr. Irvin, one of the nation's top safety speakers, is recognized as an authority on mass communica-

tion, especially in the leadership field.

The opening day's sessions included: Civil Defense, Visual Aids, Public Utilities, School, Railroad, Hospital, Chemical, Foundry and others.

Dr. Thomas Ely, assistant chief, medical branch division of biology and medicine, Atomic Energy Commission, spoke on "Current Uses of Isotopes in Medicine and Food Sterilization."

Telephone Man Helps Save Five from Tidal Waters

**Quick action prevents
tragedy when family
is marooned in hurricane**

Hurricane winds of 110 miles an hour were creating a tidal wave when the telephone operator at Block Island, Rhode Island, received a call for help from a family marooned in a cottage.

"I was in the telephone office," says installer repairman Robert A. Gillespie, "when I heard of the call. I'd been through hurricanes before and I knew they might be in real trouble."

Quickly enlisting the aid of two men who were outside the telephone building, he drove his company truck to within 400 feet of the isolated



RESCUE AT HAND. Telephone man fights his way through swirling waters to bring marooned cottagers to safety during hurricane.



AWARDED MEDAL—Robert A. Gillespie, of Block Island, R. I., was awarded the Vail Medal for "courage, endurance and ingenuity" in helping to rescue five people marooned by tidal waters. Vail Medals, accompanied by cash awards, are given annually by the Bell System for acts of noteworthy public service by telephone employees.

cottage, as near as the high water would allow.

"We could see that three poles led toward the cottage," says Bob Gillespie, "so we took handlines and a rope from the truck. We secured one end of the line to the first pole and waded to the second pole. There we tied up our line and kept wading to the third pole."

But they were still thirty feet away from the marooned family when they got as far as the rope would go—thirty feet of dangerous, rushing water.

Bob Gillespie's companions safeguarded the ropes while he fought his way alone to the cottage.

He made three trips through the rising tidal waters. First he carried a small boy to the comparative safety of the forward end of the rope.

Then, with considerable difficulty, assisted two women; and a man and another boy. And finally, though almost exhausted, he guided the entire group along the all-important rope lifeline that led to high ground and safety.

HELPING HANDS—The spirit of service of telephone men and women is shown not only in the dramatic situations of fire and flood and storm, but in the everyday affairs of life. Thousands of times every day, and through the long hours of the night, the telephone and telephone people help those who are ill or in trouble or confronted by some occasion that needs a skilled and willing hand. Just having the telephone close by gives a feeling of security and of being close to people.

BELL TELEPHONE SYSTEM



MORE *built-in* PROTECTION!



Available in 5, 10, 20 and 30 Pound Models

UNDERWRITERS' LABORATORIES APPROVED!

You get surer fire protection from Buffalo better-built extinguishers because there's more protection built-in! Highest engineering standards, exacting manufacture and precision inspection produce the finest extinguishers possible. Dealing with your Buffalo industrial distributor has many advantages. He carries a complete line of Buffalo better-built portable extinguishers, parts and recharges. Simply call him, one transaction, will answer your fire protection needs in a hurry. Call him now! He is listed in the yellow pages of your telephone directory!

**WRITE TODAY FOR THIS COMPLETE
POCKET GUIDE TO FIRE PROTECTION!**



BUFFALO FIRE APPLIANCE
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Industrial Conference Meets in Pittsburgh

THE SPRING MEETING of the Industrial Conference was held April 11 and 12 in Pittsburgh, Pa. This meeting was scheduled at the William Penn Hotel in conjunction with the Western Pennsylvania Safety Engineering Conference and Exhibit. Fourteen standing committees of the Conference met the first day, and the entire Conference was in session on Thursday, April 12.

The meeting, which was very well attended, was described as "one of the best." The reports of the chairmen of the standing committees indicated substantial progress. The sectional general chairmen reported the development of long-range plans for action in most of the sections and a number of sectional off-the-job safety committees were added to the previous list of sectional committees engaged in this important activity.

On motion of the Contests and Awards Committee the Industrial Conference voted to enlarge the scope of the Citation for Distinguished Service to Safety. Previously this award was restricted to those who have held positions as general chairmen of the various sections or have been active members of the Industrial Conference. The new rules make it possible to have this award presented to other individuals of sectional executive committees whose contributions have been so outstanding and so beneficial to the work of the National Safety Council that they merit receiving such recognition.

Another significant move was the adoption of a resolution authorizing the Chairman of the Industrial Conference to appoint a committee to study possible means of tying in the West Coast members more closely with the activities of the Industrial Conference and the various sections.

The day previous to the session of the Conference, the second training session for sectional vice-chairmen was held. The vice-chairmen present agreed that the two training sessions had been extremely informative and helpful to them in assisting them to learn more about the organization, ob-

jectives and operations of the Council.

The next meeting of the Industrial Conference will be held Sunday, October 21, 1956, in the Conrad Hilton Hotel, Chicago, at the time of the 44th National Safety Congress and Exposition.

How to Use That Power Mower Safely

PEOPLE with relatively large lawns have come to appreciate the power lawn mower. It has proved to be a tremendous time saver and surprisingly enough there have been few accidents. However, no machine is foolproof and consequently a few mishaps will occur under unusual circumstances.

The cutting edge may strike an unseen object and, should a fragment hit the chin of the operator a serious injury might take place. Perhaps the foot may become endangered when the operator attempts to cut the grass on an incline. Should the operator slip and lose his balance, the foot will slip under the mower and within seconds a few toes are amputated. For situations such as these a hand mower is recommended.

Injuries with the conventional reel type mower have been reported. Occasionally, the operator stops the machine, but not the motor, to remove a stone or branch in the path of the mower. The vibration causes the clutch to slip into gear and the mower will strike the individual before he can step aside. One child was severely injured when an unmanned power mower lurched off in high gear—the youngster was unable to react quickly enough to escape and suffered serious head injuries.

Do not reach under the deck, chain guard, or belt guard without turning off the motor. Make it a rule to clear the lawn of obstacles before cutting the grass. Keep children and pets away and, to avoid slipping, never mow the lawn when the grass is wet.

Storage of your equipment is important. An improperly placed gasoline container could cause serious harm to an unsuspecting youngster. Store the gasoline for the machine in a red can and



There is a better way to register safety messages!

"Safety messages that get read" the National Safety Council confirms, "do help reduce accidents." Yet how difficult it is to get them read—particularly the familiar simple cautions we are all so prone to disregard.

Here's one way to do it

AJAX CUPS put your safety message right in your worker's hand, several times a day, at just the moments when he is relaxed, receptive, ready to read.

At the same time, these crisp, clean AJAX Cups provide the most convenient, comfortable drinking water service, boost worker morale, and reduce the hazards of transmitted infections.

Any bubbler fountain is easily converted to provide this service. Ask your paper merchant about it.



AJAX® Cups — one-piece, wedge-shaped, easy to hold and drink from; in 4, 6 and 7 oz. sizes; packed imprinted with assorted stock safety messages at no extra cost or your own message to order.

AERO® Cups — for those who prefer a flat-bottom cup; in 3, 4, 5 and 6 oz. sizes. Also with stock safety messages or your own message to order.

GET THE FULL STORY

Write us today for this new folder which gives full details about safety-imprinted AJAX and AERO Cups and equipment.



United States Envelope Company

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15 DIVISIONS FROM COAST TO COAST

DON'T GAMBLE... your safety record



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35 MILLION JARS of PLY
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Use Ply Skin Protective Creams
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Various (12) Types of Ply Skin
Protective Creams Protect
Against 2500 Types of
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place it on a high shelf in the garage.

Power lawn mowers require expert care. Make sure that your mower is free of dirt and grime for its maximum effective use.

More Technicians Needed By Lighting Industry

TO HELP ATTRACT more than 3,000 new, highly-trained technicians who will be required by the lighting industry during the next five years is one of the primary objectives of the Illuminating Engineering Society, according to Robert F. Hartenstein, president of the professional organization now celebrating its golden anniversary. This represents an increase of 50 per cent over the skilled technicians now employed in the industry.

Addressing a large proportion of the society's 9,000 members during a five-week tour of nine I.E.S. regional conferences from coast to coast and in Canada in April and May, Mr. Hartenstein keyed his remarks to the contributions of the society in establishing codes and practical levels of lighting, as well as technical advancements in illumination. He also stressed the goals the organization must keep in sight.

The society will climax its 50th anniversary with its annual national technical conference September 17-21 in Boston.

The anticipated need for 3,000 new technicians in the lighting industry, is based on a study conducted by the society's Lighting Education Committee, Mr. Hartenstein said.

"This is a conservative estimate predicted on answers by 535 organizations—well over one-third of the industry—to a questionnaire circulated by the committee," he explained. "These 535 organizations predicted that they alone would need nearly 1,300 such technicians over the next five years in addition to those they now employ."

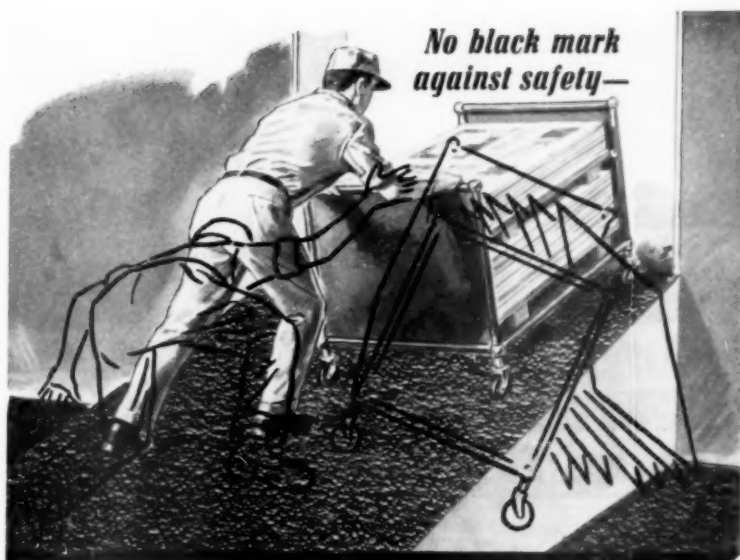
Projecting these figures, the need for new, skilled technicians for the entire industry would be approximately triple these. He continued, in the area of light

sources, lighting equipment and accessories-manufacturing, about 900 new persons trained in illumination will be needed in the next five years. Another 600 trained people will be needed by the electric utility companies, approximately 600 more by architects and consulting engineers, 300 by electrical contractors, 300 by electrical wholesalers and 300 by miscellaneous consumer organizations.

Mr. Hartenstein, general supervisor of commercial and farm sales, Ohio Edison Company, Akron, has been in the lighting industry 34 years—"from the days when the 5-foot-candle installation was a marvel through today's well-designed 50- and 100-foot-candle installations," he says.

"While we may well claim some of the credit for the progress made in lighting in these past 50 years, and be proud of our contribution toward raising the levels of illumination to the point at which they provide comfortable seeing and greater safety in most areas, particularly in business, industry and the home," there is now a greater job ahead for the I.E.S. than there was when the society was born, he continued. The society in the future will be concerned largely with the application, rather than the creation, of light.

"Of course, there will be new and wonderful inventions to come," he said, "but, for the purpose of serving the visual needs of our people, we have tremendous resources already. Our problem is primarily to use effectively what we have. This differs somewhat from 1906—our greatest need then was technical. Guided, aided and supported by our society's work and leadership, industry has provided the technical tools. And we know, from the more limited steps we have been able to take, how scientific application of lighting can make for more comfortable seeing, more efficient work in industrial plants and offices, more attractive displays of merchandise in stores and display windows, greater ease of learning in our schools, and so on. But how far have we gone in recognizing and solving the deficiencies that remain in the field? The surface merely has been scratched."



The Accident did NOT happen thanks to A.W. ALGRIP

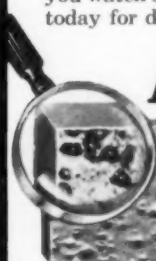
*World's only abrasive
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No production slow-up or excess overtime, either—because ALGRIP's thousands of tiny abrasive friction particles prevented slipping.

Nationwide, ALGRIP—made by a patented process—is cutting accident rates, slashing insurance costs. This easily fabricated, super-safe flooring is tough steel into which a grinding wheel type abrasive has been rolled—not coated—to uniform depth as an integral part of the steel. Hard usage merely exposes more abrasive for extra long life.

Make a test installation of ALGRIP in your *worst* slipping area—use it as an overlay or as complete flooring. It will pay for itself as you watch accident rates tumble and morale improve. Call or write today for detailed booklet.

A.W. ALGRIP ABRASIVE ROLLED STEEL FLOOR PLATE



ALGRIP—approved for safety by Underwriters' Laboratories

ALAN WOOD STEEL COMPANY
Censhohocken, Pa.

Please send A.W. ALGRIP Booklet AL-26

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Other Products: A. W. SUPER-DIAMOND Rolled Steel Floor Plate—
Plates—Sheets—Strip—(Alloy and Special Grades)



Kinnear's Exclusive AKBAR Steel Rolling Fire Doors*



The lower photo shows how well a typical Akbar Fire Door withstood heat and flames that gutted one section of a building, fully protecting areas on the other side of the wall.

Tested, fire-proven safety features of Akbar Doors assure maximum protection at openings in case of fire.

When heat releases a fusible link, a strong push-down spring closes Akbar Doors with a positive start.

The emergency closing speed of Akbar Doors is controlled, for safety to building occupants.

Another Kinnear safety device prevents the steel curtain from either pulling loose at top or from falling below floor level—even if the sill burns out!

For emergency exit, Akbar Doors can be raised after automatic closure—and they close again automatically.

The rugged, interlocking-steel-slat curtain of Akbar Fire Doors remains coiled above the opening—out of the way and out of view—until used. Easily equipped for regular, daily service use, with either manual or motor control. Write for details on additional AKBAR advantages.

*Kinnear AKBAR Steel Rolling Fire Doors, within approved size limits, are labeled by Underwriters' Lab., Inc.

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Anybody Know What This Is?

THIS FORERUNNER of a space cadet's helmet was discovered in a storage room when the Otter Tail Power Company, of Fergus Falls,



Minn., recently moved its offices. Safety Director D. R. Poole has asked our help in identifying this strange device.

The engineers in the National Safety Council's Industrial Department are comparatively young men and had never seen anything like it. Mr. Poole wrote to the Vajen-Bader Company, Richmond, Ind., but the letter was returned "Unclaimed — No Such Company."

The helmet is made from high grade leather and lined with sheepskin around the neck and shoulders. There is a forehead cushion mounted just above the goggles. Ear outlets consist of a perforated disk with a mica disk on the inside. The pressure tank and gauge are strapped to the helmet and a hose runs right through the back of the helmet. There is a whistle on the outside, with no hoses connected to it.

"We don't plan to use this helmet," says Mr. Poole. "However, we are curious to find out more about it. Maybe some reader will recognize it as a piece of equipment of days gone by."

Government should restrain men from injuring one another, but leave them otherwise free to follow their own pursuits of industry and employment.

—Thomas Jefferson

Consultation Corner

—From page 8

under high pressure, resulting in an extreme hazard to personnel. In one case involving a water hydraulic system on a press, the threaded section of a pipe sheared off and the pipe struck the operator, inflicting minor injuries. The jet of water, under extremely high pressure, literally blew a large hole in the roof of the shop. Had the operator or any other workmen been standing in the line of fire, they would have been blown apart.

Other cases have been reported where pinhole leaks have developed and caused severe injury to personnel.

This phase of the problem requires proper installation and very careful maintenance to avoid failures. Where tubing is involved, it would no doubt be well to replace it automatically at stated intervals before it has a chance to weaken or deteriorate.

As to the fire hazard, this is a serious problem when flammable oil is used. Several airlines are now using non-flammable hydraulic fluids for systems in transport planes. Such non-flammable liquids are available from a variety of suppliers.

Grounding Portable Electric Equipment

Question. We recently had an accident involving a portable electric drill which pointed out the need of our providing a satisfactory ground for this portable equipment used by our construction crews in remote areas.

One of our construction crews was erecting a pre-fab steel building, which was to house a district regulator station. A cement floor had been poured, and the building had been partially assembled on this base.

One man was using a 1/4-in. portable electric drill to put bolt holes in the sides of the building. Power was being supplied from a house located about 150 ft. away. Three 50-ft. extension cords were used to carry the electricity from the house to the building site.

As the man began drilling he

THIS MAN CAN SAVE YOU

Thousands of Dollars



Floors must first be stripped of existing waxes. Once LEGGE maintenance is in effect, this step is seldom repeated. Safety Engineer oversees application of cleaning compound to a segment of flooring at a time.

Floor maintenance is his business. As a LEGGE Safety Engineer, he knows no two floors are alike.

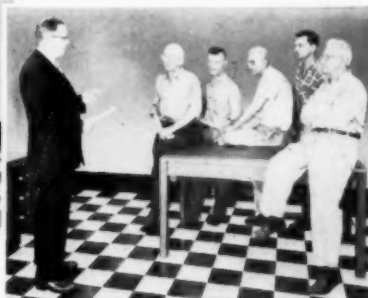
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placed his hand against the side of the metal building and received a shock of such intensity that he was unable to release his hold either on the drill or on the building. The bit finally broke breaking the circuit, but allowed the drill to fall into the man's forearm, inflicting a severe wound.

The man was kept in the hospital overnight and then released to his home. He lost five days as a result of this accident.

I would appreciate any suggestions as to a type of ground to cover this situation. I might also point out that these same crews sometime find it necessary to use a portable generating unit to provide electricity when working in remote areas.

Answer. National Safety Council Data Sheet D-299, "Grounding Portable Electric Equipment," points out the hazards involved in ungrounded equipment and discusses types of grounds, grounding conductors, built-in grounding systems, and maintenance and employee training.

You should first see that all of your portable electric equipment contains a ground, whether it be a separate ground wire with a connector or the built-in ground system containing a separate equipment ground wire built right in the cord with an attached polarized plug.

The next step is to check all equipment with a testing device to see that all of the grounds are properly attached and that there is a continuity of the grounding circuit.

The ground which is attached to the electrical equipment is only as good as it is used. There have been cases where tools equipped with a third conductor (equipment ground wire) was cut off or the plug changed.

If you have a three-prong plug on the end of the electric drill and it is plugged into the matching receptacle or into a three-conductor extension cord, then the shell of the tool is grounded continuously to the fixed ground within the building.

When portable generating units are used to provide electricity in remote areas, it is recommended that the generator be grounded

with a grounding cable to the nearest water pipe, fire hydrant, building structure (if the structure has been tested as a good ground), or, if necessary, a driven ground following the National Electrical Code recommendations.

If you follow these recommendations there is no reason why this type of accident should recur. Some maintenance men touch electric drills against a grounded structure before using them. If there is a defect or a faulty ground wire, the tool will spark or blow a fuse in the circuit.

In your particular accident the worker placed himself in series with the circuit and established himself as part of the ground.

Oscillating Lights on Switch Engines

Question. We are considering the installation of oscillating lights on our locomotives as an aid to safety. Our roads are switching roads that operate almost entirely within the confines of steel mills.

We would like to know if you are aware of any comparable roads that use oscillating lights on engines. If so, we would appreciate any information you may have as to location of lights on engine, regulations as to use, whether automatic or manually controlled, and any other information you think may aid our efforts.

Answer. We discussed your question with several safety directors of switching railroads in the Chicago area and their views may be helpful to you. One superintendent of safety says that his road does not use oscillating lights in yard work and does not consider it particularly beneficial to do so.

Another superintendent of safety stated that much of his company's work is very similar to yours, since they serve steel mill areas. He says they are considering installing a flashing light similar to those used on police cars on top of the cabs of their diesel switch engines. They do not use oscillating lights and have decided that the flashing or rotating lights will be more effective for attracting attention.

This company also keeps the



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Your \$64,000 Question

That next accident coming up—will it get you, or someone else? Will it be a scratcher, or a mangler? Will the person who goofs be able to mend his ways, or will he be stone cold dead?

Unfortunately, you nor anyone else has any way of knowing the answer to this one—and, it ain't wise to figure you'll have a chance to be rescued by an expert on the subject.

You can be sure of only one thing. Just because you've played the odds so far, and won, doesn't put you on a plateau someplace where such things as accidents can't reach you. Old lady luck doesn't dish out Cadillac convertibles to people whose only claim to fame is that they have come a certain way in life without getting killed. She calls them the way they fall, and you have to be constantly on the alert or eventually end up being knocked off with the other amateurs.

I wish the person who is slated to be the next victim could go home for a week first, to study up on all the precautions he's been given in the past on the stunt he's going to pull which will get him into trouble. Such as—Don't walk under suspended loads—Don't adjust machinery while in motion—If you're not sure, ask—Slow down at intersections—Don't walk on the red—Read the instructions—etc., etc.

I could suggest some very good reference material and some top notch safety experts who could be taken along also to help make the fateful decision.

It seems that no matter what the physical situation may be, there is practically always a boner of some type pulled by the victim involved. And, whether on a quiz program or while just plain living, a boner can be mighty costly.

It only adds insult to injury, when after the damage is done the victim asks himself, "Why did I flub that, I knew the right answer all the time."

ROBERT D. GIDEL

regular engine headlight on at all times, day and night. While the engine is out on the road, the headlight is on "bright." In the yards during the daytime, the headlight is always turned on, but not necessarily bright. Whether it is bright or dim is left to the discretion of the engineer.

As to location, when the oscillating light is used it is usually mounted directly below the regular locomotive headlight. You will note, however, that in the case of the flashing light, the railroad mentioned above proposes to mount it on top of the cab, where it will be visible from all directions at all times.

Auto Safety Belts Prove Worth in Company Cars

BECAUSE the effectiveness of safety seat belts in reducing the severity of crash injuries has been definitely established by its own

experience, the Bituminous Casualty Corp. of Rock Island, Ill., is equipping all company cars with a second belt for the front seat.

Since the company made its original installation of safety belts in its 125 company operated cars two years ago, four major accidents have occurred which have demonstrated the effectiveness of safety belts, in the opinion of Don M. Glancey, safety engineering department, who heads the firm's fleet safety program.

In one of the four accidents, the car involved was completely demolished while the driver, held firmly in his seat by his safety belt, escaped with only minor injuries.

Two of the accidents were collisions, Glancey noted, and in both cases Bituminous drivers, wearing safety belts, escaped with far less severe injuries than the drivers of the other cars involved, neither of which were equipped with belts.

Toward Tomorrow

—From page 21

us was only skin deep and could be wholly discounted in any situation where human safety was involved.

In those days there were no company rules or national codes crystallizing human instincts into mandatory safety procedures. But they came soon and they found ready acceptance all around the world. The incident long ago at Detroit has been multiplied millions of times since in every tongue and by groups of airmen representing every color and class on earth. The central fact is that human nature was ready for such a triumph.

Sometimes the fact leads also to new concepts of authority. For example, whose authority runs an airline?

Not long ago an airline president had planned a special flight for leading publishers and others. It was an ultra important occasion. To everyone's relief, arrangements clicked perfectly on the day of departure. Passengers and baggage were whisked through customs with a minimum of red tape. Fluttering staff members and public officials lent an aura of excitement to the scene. Guests were briefed and seated. The airline president was beaming his satisfaction. Crew members were at stations. The big props turned over and speeded up. All was set.

Then suddenly the props throttled back and stopped. The ramp was pushed to the door again. The door opened and all looked back. A grim face poked into the cabin and a blunt bass voice announced, "This airplane won't take off today."

It was the voice of the chief mechanic. He had found an oil leak.

Who runs an airline? Did the president fume at the chief mechanic? Not he. "Thank you, Chief," he said, and he de-planed his guests for a luncheon downtown and a departure later in the day in another aircraft.

So who runs an airline? Here again it is safety alone that delegates authority . . . not because it is an ideal but because it is the

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law of self-preservation. It can be supported by management and labor unions alike, by passengers whose planes are disrupted, by stockholders who furnish the sinews of finance, by governments whose flags compete in commercial skies.

And out of experience in application of our golden rule . . . our law of survival, if you will . . . comes a by-product of no mean significance.

Each and all of us come to un-

derstand that we can allow the other to hold fast his faith and pride as "best," "finest," "only," "supreme," without surrender of our own. Who ever developed great faith in something he labeled "second best?" We ask none to conform in any respect except to that ageless common denominator which is central to the teachings of Zoroaster and Paul, Abraham and Buddha, Confucius and all other founders of the known 64 good-will religions . . .

do unto others as you would have others do unto you and that is the crux of human safety.

What use the leaders of the nations, the molders of thought, the diplomats, the teachers of arts and science and dogmas, may make of our demonstrations of human cooperation . . . our forging of the golden rule into a workable law of life . . . is unknown to us. All we can do is to point that we have found a common denominator and built upon it a system of physical access which makes our world a community of potential brotherhood. And this in a sphere of fierce competition and in the era of the world's most numerous and darkest antagonisms.

Could it be perhaps that survival for all will emerge from a mutual concern for human safety? Might the eventual brotherhood of man be expressed in voluntary disciplines based upon common respect for human life?

In air transportation our safety procedures have grown immeasurably. In the beginning, they were warnings of danger. Now they are studies of preventive measures against development of hazards. And such is the degree of cooperation that we begin to wonder if our frescoes on the clouds of the skies may have larger implications than the building of international air travel. From our cockpits and desks and laboratories and control towers we believe human nature is ready for higher levels of cooperation.

If dedication to the enforceable safety of others could reach beyond the law of life for air travel, what might not accrue to the peace of the world as we struggle toward tomorrow?



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Molded, from a flame retardent, waterproof material in seven different brilliant, permanent colors — red, yellow, blue, white, grey, green, brown—"SUPERGARD" exceeds all Government Specs. for impact, penetration, electrical resistance, flammability, etc. . . . In the various adjustments, each change is positive and secure. Cool and well ventilated, for wearing in the sun—"SUPERGARD" is also supplied with a half-liner for frosty weather and a full-liner for frigid temperatures. There is no metal of any kind in its construction.

Easily sterilized, there is nothing that need be replaced in "SUPERGARD," when it is reissued, but the wrinkle free sweatband which comes in leather or leatherette . . . "SUPERGARD" is also available with goggles; faceshield; welding helmet . . . Send for completely descriptive catalog page and prices.

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"Scratch my back for me, willya, Gus?"

Voice of the Reader

Let's have your views on current topics. You don't have to agree with us

Down to Earth

KIMBERLEY, B. C. Although I have enjoyed and profited from the monthly issues of your magazine, I had never felt the need to write about any article. After reading Dr. W. B. McCunniff's article, "Patching Up Some Industrial By-Products," I could not resist any longer.

In my 15 years as a safety engineer and safety officer I have never read a more down-to-earth or purposeful article from a medical man.

Please extend my sincere congratulations to Dr. McCunniff on this article and to the trend of his medical advice.

T. S. WILSON, *Safety Officer,*
The Consolidating Mining and Smelting Co. of Canada, Limited.

Ear Stopples

NEW YORK. We refer you to page 102 of the Annual Safety Equipment Issue which states:

"Pliable balls of wax and cotton are molded by the user to fit his ears. This is the simplest, least expensive and least effective type of commercial protection."

We are amazed at the statement that wax and cotton, which evidently is our product, are the "least effective."

In the publication, *Noise Control*, January, 1956 issue, there is an article written by H. E. Von Giercke and the graph on page 41 indicates that our "ear stopples" are the most effective of all

those tested. We also refer you to the statement on page 41:

"Summarizing these findings, we can state that it makes little difference which ear plugs we use, so long as the ear plug fits tightly and has no leak. There are, however, differences with respect to comfort among ear plugs."

CLARENCE H. LOW, President
Flents Products Co. Inc.

EDITOR'S NOTE: Ear plugs of wax and cotton molded by the user are not to be confused with

the wads of untreated cotton commonly used for makeshift ear protection. Waxed cotton plugs can provide a tight seal and are readily fitted to variations in individual ears.

Sometimes a man with a clear conscience only has a poor memory.

Quite a bit of the world's trouble is produced by those who don't produce anything else.

LOW COST way to make your factory NOISE - SAFE with Bemis TRANSWALL



Reduce Factory NOISE as much as 22 Decibels

NOISE IS COSTLY . . . control it with TRANSWALL. Here's the new low cost sound barrier that isolates noisy areas anywhere in your factory, yet readily retracts for materials movement. TRANSWALL is flame resistive for safety.

TRANSWALL SOUND BARRIER INSTALLATIONS are custom engineered by qualified acoustical contractors. Some installations show direct reduction of 22 db in "open" and "closed" readings; even more in "before" and "after" readings. TRANSWALL is particularly effective in stopping higher frequencies.

TRANSWALL is easy to install. Nylon rollers support the curtain in overhead track. Layouts may be readily changed to suit new floor plans, yet noise reduction is great enough to make 95% of factory areas noise-safe.



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ISLAND ENCLOSURE straight or curved tracks.	CORNER ENCLOSURE 2 straight curtains.	OFF-THE-WALL ENCLOSURE 3 straight curtains.	CURVED TRACK ENCLOSURE single curtain.

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Well-known chemical concern has opening for experienced safety engineer. Minimum of five years' experience and record of successful leadership in this type of work required. Midwest location. All replies confidential. Complete resume, including salary received and reference should be submitted to Box 418, NATIONAL SAFETY NEWS.

Smog Research Costs \$6 Million a Year

THE SMOG PROBLEM of the nation's leading metropolitan centers is now receiving the attention of more than 13 major research agencies from coast to coast, at an annual cost of more than \$6 million, according to a research survey compiled recently by the Los Angeles County Air Pollution Control District.

The report, released by Air Pollution Control Officer Smith Griswold, shows that \$4½ million is being spent this year by 12 major private and public agencies while \$2½ million is being spent by the County Air Pollution Control District. The Control District programming expanded control and research activities for the next fiscal year amounting to nearly \$4 million.

"As evidenced by the report, increasing recognition is being given to air pollution as the nation's newest problem. There is now a growing awareness that clean air is no longer a free com-

modity," said Control Officer Griswold in commenting on the report.

"While Los Angeles County probably suffers the most intense and most frequent concentrations of smog, it is now apparent that we are not alone in facing this problem. There is hardly a major population center in the United States which is not now afflicted with an air pollution problem. It is our hope that by combining the efforts of all the nation's research agencies, and by centering major efforts, including that of the Federal government, in Los Angeles, we can more quickly reach solution to the total smog problem," he said.

The report shows that top priority is being accorded the air pollution problems associated with motor vehicle exhausts, with more than \$1½ million currently being poured into research aimed at eliminating or reducing the important role of motor vehicles in the creation of smog.

Busy on the problem are the

Los Angeles County Air Pollution Control District, the Automobile Manufacturers Association, the U. S. Public Health Service, American Petroleum Institute, Western Oil and Gas Association, and the Air Pollution Foundation. A number of private research and development firms are also involved in engineering development of workable exhaust control devices.

Among the projects aimed at uncovering an answer to the auto exhaust problem are:

1. Studies to determine the relative smog-forming potential of various fuels. These studies are being undertaken by the APCD, the petroleum industry and other research agencies.
2. Testing and evaluation of proposed exhaust control mechanisms. This work is being undertaken by the automotive industry and the APCD. It was noted that the development of control devices is also underway in



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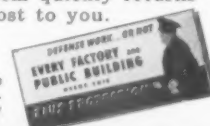
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several leading national engineering firms.

Also receiving major research emphasis is the effect of smog on human health. Investigating agencies are the U. S. Public Health Service, California Department of Public Health and the University of Southern California, as well as other smaller institutions. Funds allocated for the various agencies totals approximately one-half million dollars.

Specific efforts to solve problems of controlling industrial sources of air pollution are also highlighted in the report.

Here is a representative sampling of projects being conducted by the various agencies:

- Investigation of eye-irritating characteristics of auto exhaust-caused smog.
- Studies and development of air sampling and measuring equipment.
- Analysis of various air contaminants.
- Effect of smog on pulmonary function.

—Determination of meteorological factors in relationship to smog.

—Studies of petroleum refinery emissions as a basis for determining further controls.

—Development of air pollution control plans for communities and areas throughout the U. S.

—Studies to relate the incidence of human disease to air pollution.

—Investigation of the mechanisms which form smog, such as the oxidation of hydrocarbons (gasoline vapor) into smog by sunlight.

Among research projects being conducted by the Research Division of the APCD are the following:

—Chemical source testing of potential sources of air pollution in major industrial plants and operations located in Los Angeles County as a basis for determining the efficiency of existing control equipment and the need for new laws and engineering devices.

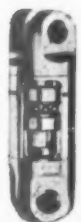
—The evaluation and development of methods for controlling the emissions of air pollutants from a variety of industrial processes, including glass manufacturing, processing of paints, varnishes and solvents, and the transferring and marketing of petroleum products.

—A complete evaluation of all sources of air pollution within refineries and steam power plants as a basis for determining the need for future control programs.

—Meteorological and statistical studies aimed at the development of industrial zoning programs which might minimize the air pollution problems resulting from industrial operations.

—Development and improvement of methods used in air monitoring and meteorological programs, including the measurement and analysis of contaminants found in the atmosphere of the Los Angeles Basin.

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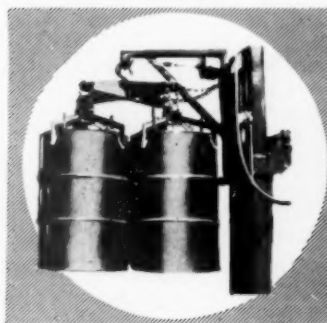
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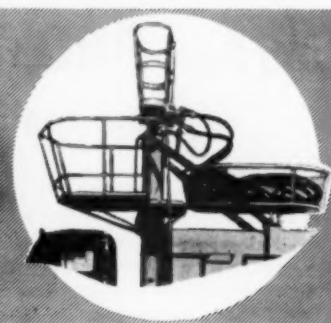


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Reducing Noise

—From page 29

taining cylinder can be decreased by suitable lining.

Rattles, lost motion, etc.: This type of impact noise can be classed as minor impact and the remedies are fairly obvious. Proper inspection and maintenance, securing, stiffening or damping of loose panels, and replacement of worn parts, are effective. Elimination of rattles prevents low frequency energy from being transformed into more undesirable high frequency energy. Significant noise reduction can be obtained by these simple control means as great as 10 db.

Friction: Considerable noise can be made by frictional forces in general and in grinding, clutches or brakes. Part of the noise of cutting metal and wood can be classed as frictional noise.

Motion along a contact surface creates force variation if the surfaces are not well lubricated.

The frequency characteristic is rich in high frequencies, usually because of resonances in the part excited. Clutches and brakes tend to squeal, grinding produces broad band noise, and other friction noises are of the squeaking and scraping type which have objectionable high frequency energy.

Remedies include lubrication, substitution of materials, especially in brakes and clutches, changes in shapes of cutting tools and sharpening of tools which become noisy with wear. Gear noise is caused partly by frictional forces as well as variable forces at tooth impact frequency.

Some improvement can be obtained by lubrication, substitution of helical or worm gears for direct gears, use of plastic or fiber gears, and reduction in speed.

Fluctuations in gas flow: Turbulence in the escape of compressed air or steam causes a loud hissing or roaring noise. When the air velocity is not being used, a simple muffler is effective. This, for outlets having small air flow, may consist of a can filled with steel wool or any other means of slowing down the escaping gas. Reductions of 10 to 15 db. are possible.

When the air velocity serves a purpose, such as cleaning out



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"Invisible gloves"
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chips, stripping or removing parts, noise appears to be unavoidable at the present state of knowledge. The least that can be done is to keep the air flow at the minimum velocity necessary for the operation by using a reducer valve in the line.

Sound Absorption

Total enclosure: Noise in the air can be kept from spreading by almost any type of enclosure. Porous sound absorbing materials are of direct use in reducing sound transmission through a wall, but of little value on the inside of an enclosure to reduce the sound level which must be contained.

Transmission loss can be greatly reduced by using double walls with an air space. In some cases, an extremely noisy machine or area can be totally enclosed to take advantage of large noise reductions of 24-45 db.

Complete covers over a noisy part of a machine are another useful method in noise reduction. Whether a small enclosure over part of a machine will do a good job of noise reduction should be checked by trial with an improvised cover first.

If this method gives promise, a cover made of one of the following types of materials should be designed:

- An impervious barrier, such as sheet metal, 16-gauge or thicker.
- Rubber-like material to seal the edges and vibration-isolated fasteners.
- Absorbing material inside cover to absorb sound and prevent build-up of noise.

Partial enclosure: The term "partial enclosure" is used for noise shields and enclosures which have openings greater than a few per cent of their area. Noise radiation from these openings is the principal path of noise flow from partial enclosures, since the transmission loss of the barrier is at least 20 db. Sound absorbing linings must always be used inside these partial enclosures, or there will be little noise attenuation.

This type of enclosure is useful mainly in giving a shadow effect for workers who otherwise would be in the high level direct noise field. Basically, an operator is not

protected in this type enclosure, but nearby operators are.

Space absorption: The most common use of sound absorbing material is a general or over-all method of reducing noise in enclosed spaces. However, absorptive materials used on ceilings and walls of a general work area give a reduction of noise levels in the reverberant field at a distance from the noise source, but absorption will not decrease the level for

workers less than five to 10 feet from the source.

In most practical installations of area treatment with absorbing walls or ceilings, there would be a maximum reduction of about 10 db. In addition, area treatment will "push back" distant noises and allow an operator to hear his own machine better.

When some people leave a job they do not create a vacancy.

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**Electronic
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No loading rack should be without this POSITIVE INDICATION OF PROPER GROUNDING against static electricity.

Bulk Plants, Chemical Terminals, Tank Farms, Marine Terminals — wherever there is loading and unloading of volatile liquids, the Gilbarco Electronic Indicating Ground assures POSITIVE protection — POSITIVE indication of proper grounding.

IT'S SAFE — eliminates the ever present source of danger at all loading racks — faulty grounds which lead to FIRE.

IT'S SIMPLE — when proper ground is established INDICATOR gives "go ahead" by means of light or audible signal.

IT'S POSITIVE — here is the ONE way to be SURE that some wiring defect, paint, rust or carelessness is not causing a faulty ground.

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PERSONALS

News of people in safety
and related activities

Dr. C. K. Beck Named AEC Reactor Safety Adviser

DR. CLIFFORD KEITH BECK, head of the Department of Physics at North Carolina State College, has been appointed to the Atomic Energy Commission staff to assume administrative and technical responsibilities in the Commission's reactor safety program.

Dr. Beck, a veteran nuclear physicist who designed and operated the first university-owned research reactor in the United States, will take a year's leave of absence from the college to become scientific adviser to the director of the Division of Civilian Application.

The Division has major responsibility for encouraging the devel-

opment of a private atomic energy industry and for regulating it through a system of licensing from the viewpoint of health and safety. Dr. Beck will assist in developing criteria and standards for the safe design and operation of atomic reactors and other nuclear facilities and in the safety evaluation of individual facilities proposed by either the Commission or by private enterprise under license.

Dr. Beck's association with the national atomic energy program began in 1943 with the Manhattan Project. He later served as senior physicist and laboratory director with Carbide and Carbon Chemicals Corporation at Oak Ridge, Tenn. He is vice-president of the Oak Ridge Institute of Nuclear Studies and a fellow of the American Physical Society.



Jack Horner

NSC Public Information Department Names Two

JACK HORNER, director of news for the National Safety Council, has been named assistant manager of the Council's Public Information Department to succeed DAN

THOMPSON who recently retired for reasons of health.

Mr. Thompson had held the dual title of assistant department manager and director of radio and television for 14 years.

Mr. Horner joined the Council in 1939 after newspaper experi-



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It's here — the "Refinery Suit" — scientifically designed and made especially for protection against all petroleum products. They can't eat away or destroy this suit. It's double-coated, inside and out, with neoprene. Impervious—so oil products can't seep through and irritate skin. Can be laundered or dry-cleaned. Available in yellow or aluminum. Look into new "Refinery Suits" for your men now!



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STEEL-TOE WORK SHOE
• black "Royal-Tuff" finish
• steel shank, tempered rubber outsole



NEOPRENE SHORT BOOT
• maroon • cleated outsole • "Shock-proof" insole





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U. S. ROYAL RUBBER FOOTWEAR



United States Rubber



Don Moore

ence in South Bend, Ind., and Los Angeles. He served in the navy as a lieutenant from 1942 to 1946 and was awarded the Purple Heart and the Bronze Star Medals for action at Okinawa.

He was appointed director of

news in 1948. He continues in this capacity where he is responsible for Council publicity in newspapers, general magazines, trade journals, and employee publications.

DON MOORE succeeds Mr. Thompson in the directing of radio-TV activities. Mr. Moore, a former member of the Council's radio and electrical staff, returns after nearly three years' experience in advertising and public relations with station KTAR, Phoenix, Ariz., and State Farm Mutual Insurance Company, Bloomington, Ill.

JOHN M. KANAK has been appointed safety director in the Office of the Chief Signal Officer, Department of the Army, Washington, D. C.

Mr. Kanak will be responsible for the Army Signal Corps safety program under the Chief Signal Officer. Among his duties, he will establish, supervise and direct safety programs and activities at Army Signal Corps installations.

Mr. Kanak was safety officer of the Naval Research Laboratory and the Office of Naval Research for six and a half years.

He is a graduate of Virginia Polytechnic Institute with a B.S. degree in Mechanical Engineering.

His college career was interrupted by World War II when he saw action as a member of the Army's 80th Infantry Division in France during 1944-45.

Mr. Kanak is a member of the American Society of Safety Engineers.

Obituaries

GEORGE E. SANFORD

GEORGE E. SANFORD, for more than 32 years a prominent safety man, died April 3rd in Winter Park, Fla. Mr. Sanford retired in June 1946 after 47 years of service with the General Electric Company. He was 78.

Starting with General Electric at the Lynn, Mass., Works in 1899,

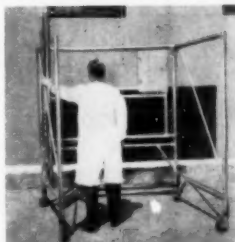
Aluminum Scaffolds...

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Scaffold Opens

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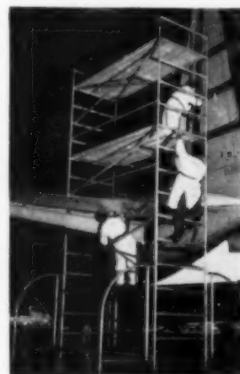
One man can erect the base section of the "Fold-A-Way"® Scaffold in less than a minute. End frames swing open sideways, while the base section is in a standing position, making an easily managed swing of about 90°. Adding additional 6' sections takes just a few minutes. Basic unit is 4'6" x 6' and is 7' high including rubber-tired casters. Ball bearing extension legs permit height adjustment up to 24". Approved by Underwriters' Laboratories, Inc. For more information on the "Fold-A-Way"® Scaffold, write The Patent Scaffolding Co., Inc., 38-21 12th Street, Dept. N.S.N., Long Island City 1, N. Y.



(*Trade Mark)

New 4'6"-Wide Ladder Scaffold

Large platform working areas are featured in this new 4'6"-wide ladder scaffold. It is especially designed for overhead repairs, painting, cleaning, relamping and other overhead work where great mobility and stability is desirable. Outriggers may be added to give additional stability when platform height exceeds 18'. Both scaffold and separate outriggers have swiveled, rubber-tired casters for easy movement to all parts of a plant. Lightweight aluminum components make the scaffold easy to erect and move. Base section is 6'7" high including casters. Other heights possible by combining additional ladder units 5'4" and 4' high and by using 24" safety-type leg adjustment. (On all three Scaffolds.) Diagonal braces give 6', 8' or 10' spans. Write The Patent Scaffolding Co., Inc., 38-21 12th St., Dept. N.S.N., Long Island City 1, N. Y.



2'-Wide Ladder Scaffold

Has same features as 4'6"-wide scaffold, but is 2' wide. Ideal for maintenance work in narrow hallways and aisles. Rolls right through standard 30" doorway. Can be used with diagonal braces to give spans of 6', 8' or 10' platform. Compact — parts lie flat and take up little room. Write The Patent Scaffolding Co., Inc., 38-21 12th Street, Dept. N.S.N., Long Island City 1, N. Y.



Mr. Sanford spent seven years in construction engineering. In 1924 he became secretary and in 1928 chairman of a company committee which directed the safety activities of the entire organization.

Mr. Sanford held numerous offices in the National Safety Council and in many regional organizations. For three years he served the Council as vice president for Engineering and for many years was a director and member of the National Executive Committee. He was also chairman of the Wood Products

Section and a member of the President's Medal Administration Committee.

In World War I he was a safety expert with the U. S. Employees Compensation Commission. In World War II he served on the American War Standards Committee on Specifications for Protective Occupational Footwear.

He was president of the Boston, Mass., Safety Council and vice-president of the Schenectady, N. Y., Safety Council, a member of the Veterans of Safety and a life member of the Capitol Dis-

trict (New York) Society of Safety Engineers.

Mr. Sanford is survived by his widow, Eva.

HARRY M. MOSES

HARRY M. MOSES, from 1949 to 1955 a member of the board of directors of the National Safety Council, died April 1 in Washington, D.C. He was 59.

President of the H. C. Frick Coke Company and other coal



Harry M. Moses

producing subsidiaries of United States Steel. Mr. Moses headed the world's largest group of producing mines. He was born in Illinois, the son of Thomas Moses, a dominant figure in the coal industry. Harry Moses followed in his father's footsteps, worked as a miner in school and college vacations, and took over the Frick presidency when the elder Mr. Moses stepped up to a United States Steel vice-presidency in 1938.

A close personal friend of John L. Lewis since boyhood, Mr. Moses' prestige was such that northern coal operators in 1951 allowed him to act as a one-man negotiator with the long-time czar of the United Mine Workers union.

Mr. Moses is survived by his mother, three sons, a daughter and 10 grandchildren.

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ASA Publishes New Standard for Quarries

A NEW American Standard or Safety Procedures for Quarries has just been released, it has been announced by Vice Admiral George F. Hussey, Jr., USN (ret.), managing director, American Standards Association.

The new standard is designed to eliminate frequent and serious hazards in quarrying. (This covers all "open face" pits from which stone, sand, gravel, or other materials are taken.) The precautions recommended apply for the most part to stone "mining" operations also.

The committee which developed the standard based its work on the National Safety Council's publication entitled *Safety in Quarry Industries*, used for many years in the industry. But the committee goes much further in its recommendations, especially on procedures dealing with explosives and the operation of trucks and other quarry equipment.

The 216 recommendations on explosives contained in the code were developed and submitted to the committee by the Institute of Makers of Explosives. Of these, 50 articles deal with the safe storage of explosives—in "permanent magazines which are theft-resistant, fire resistant and bullet resistant."

In case of a scheduled plant shut down, one article recommends special precautions for the removal of all explosives including detonators from company property, and provides that additional locks be placed on magazines with the keys held in the custody of a responsible person.

The section on explosives also says that the roofs of magazines located where it is possible to fire bullets through the roof into the explosives must be bullet-proof. A condensation of the American Table of Distances issued by the Institute is included. Safe distances from inhabited buildings, passenger railways and public highways, at which explosives may be stored, are specified.

The entire section on explosives makes recommendations concerning handling, transportation, and the use of safety fuses and caps.

Safeguards are set up for all types of blasting used in quarrying. Cautions are given for large diameter drill hole blasting, for toe hole or snake hole blasting, wagon drill hole blasting and tunnel or coyote hole blasting.

Special instructions on safe electric blasting are included. As electric blasting in close proximity to radio stations is dangerous, the code says if you want to blast within one mile of a permanent broadcasting station, you'd better

consult the manufacturer of the blasting caps first! The code further warns against using portable radio phones and transmitters within a 100 feet of where electric blasting caps are being used.

Trucks and automotive equipment, next to explosives were given the most consideration by the document. Attention was given to all factors in equipment checking, driving hazards, dangers of overloading, proper use of a power shovel, horn signaling and

sellstrom safeguard -- of the Month



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SAFE!!

Here's the most practical and pleasing approach to the problem of eye protection at all times for welders—the patented Sellstrom "PRESTO" Shield!

It automatically protects workers' eyes when helmet is raised for work inspection, fresh air, etc.; lifts out of the way when helmet is lowered, so there's no double-lens viewing to tire eyes!

This handy protective shield can be applied to all

of the standard Sellstrom welding helmets. Another good feature—it's extremely light weight—adds only about an ounce and a half to the total helmet weight.

These light weight, low-cost "PRESTO" Shields are available in green or clear; with or without leather sweatband. Replacement windows are also available.

Write for brochure which gives complete information and prices on the "PRESTO" Shields, or send for Catalog No. 32 for full information and prices on Sellstrom helmets, respirators, goggles and other Safeguards.

Distribution in all
important cities.



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the overall condition of trucks used in quarrying.

When hoisting and lowering men in cars on slopes and inclines, the code provides that a special device be installed to insure against accident should the drawbar, coupling, or rope of any car break or become detached.

For the general health and convenience of employees, the code outlines certain practices for housekeeping, toilet facilities and drinking fountains. Change houses where employees may bathe and dress at the end of the shift are recommended.

Arrangements should be made to provide employees with personal safety equipment such as eye shields and goggles, respirators, safety belts and lifelines and hard hats. During the summer months employers should keep salt tablets available for workers.

An appendix in the publication gives information on establishing and using first-aid and medical facilities and advice on investigating accidents and preparing reports



"The boss asked the new man to put a seal on that box."

and records on them. The appendix also contains hints on how to make the best use of the procedures outlined in the American Standard.

The entire American Standard Safety Procedures for Quarries is made up of fourteen divisions: Scope; Definitions of Terms; Personal Protective Equipment; Physical Conditions of Quarries and Pits; Drilling; Explosives; Trans-

portation; Loading, Conveying and Other Equipment; Electrical Equipment; Structures, Walkways and Working Services; Hand Tools; Welding; Fire Prevention and Sanitation.

The following organizations had representatives on the committee on Safety Procedures for Quarries: Association of Casualty and Surety Companies, Gypsum Association, Institute of Makers of Explosives, International Association of Governmental Labor Officials, National Association of Mutual Casualty Companies, National Crushed Stone Association, Inc., National Electrical Manufacturers Association, National Lime Association, National Safety Council, National Sand and Gravel Association, U. S. Department of Interior—Bureau of Mines, U. S. Department of Labor—Bureau of Labor Standards.

This American Standard, M28.1-1955, is available from the American Standards Association, 70 East 45th St., New York 17, at \$1.50 a copy.

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of FORGED beryllium copper

WHEREVER sparks mean DANGER, you can play it safe — and still get maximum tool life — with I-R Spark-Resistant Paving Breaker tools. That's because they are FORGED — not merely cast — of special, high-strength beryllium copper alloy. A trial order will quickly demonstrate their superiority. Write for Bulletin 4173.

5-383

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The Works Manager

—From page 48

guidance to permit a good job to be accomplished.

4. Fair play—no favoritism.
5. Opportunity to talk things over freely.
6. Understanding of the employee's problems.
7. Prompt handling of any complaint relating to the safety factor in the plant's operation.
8. That the safety supervisor let the plant employee and plant supervisor know where he stands on matters pertaining to safety.
9. Adequate representation of the employee's point of view to top management.

10. Recognition for a job well done.

11. That the safety supervisor make it plain to the employee that he is being looked upon as an individual making his own contribution to the successful operation of the business.

12. Active participation in civic affairs where he might help promote accident prevention activities.

We know that accomplishments in accident prevention during the last decade have largely been the result of safety engineering leadership. Naturally, the safety supervisor has had a leading part in the movement. He is the head man, the overseer, the leader in directing men along the lines of accident prevention policy.

Every supervisor—every safety supervisor—as the representative of his company is subject to the provisions of the labor law of his state. The basic purpose of the law is to insure the health and safety of workers by requiring minimum standards in the construction of buildings, installation and operation of machinery, and working conditions.

Nearly every state now has a workmen's compensation law providing for payment of compensation for injuries to employees or for death of employees as a result of occupational injuries. Employers are required to maintain a record of injuries to employees and to report those involving medical expenses or loss of time under specified conditions.

You are all familiar with the manner from which funds for compensation benefits are paid or derived, and you also should recognize that in your position as safety supervisors you have a responsibility—an economic respon-

sibility to your employer to lead and enforce a policy of accident prevention. This responsibility is, of course, in addition to that which all of us have to protect the physical well-being of our fellow workers and our neighbors.

However, the economic responsibility as representatives of your company is something that should not be minimized. When you, through your efforts and the cooperation of your fellow employees, produce a safe plant you have

also produced a situation which can't help but make your plant a competitive one—one that is more likely to be loaded with jobs than if the safety factor were neglected.

For the safety supervisor to perform effectively, he must realize that it is impossible to install a mechanical guard on a man's actions; the guard must be created within himself, so that he will habitually think and look before acting. Only through sustained education and supervision

Prevent Accidents with

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SIGNS for SAFETY



Dependability and Quality are words that have become synonymous with **READY MADE** in over 50 years of service to INDUSTRY.

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can this "mental guard" be created and maintained.

The safety supervisor must know that a cross-section of industrial accidents shows a very consistent uniformity in the relative frequency of certain types of accidents, and that the evidence points to consistent faults in behavior. Naturally, the relative severity varies to reflect relative hazards. For instance, a man may trip or slip on the ground and not be seriously injured by the fall. Another man, however, may trip

or slip under similar circumstances on a scaffold and fall to the ground, meeting serious injury or death.

The safety supervisor must be alert to the fact that there is no certain control of the injury resulting from an accident. A heavy object may fall without striking anyone, may cause death, or may result in only minor injury, depending upon the factors of time and distance. Two persons may incur identical injuries, and yet one may recover quickly and re-

sume work, whereas the other may suffer permanent impairment as a result of constitutional weakness or because of a former injury which has been aggravated. *Therefore, the safety supervisor must continue to place emphasis upon the prevention of all accidents, so that there will be no injury.* He should not and must not be over-concerned with "industry averages," but his goal should be a big, fat zero.

The safety supervisor must bear in mind at all times that the fundamental principles of successful safety measures are the same, irrespective of the size or type of a plant or business. There is no "magic" that will insure results. There is no short cut. Short-lived campaigns will produce short-lived results. Effort must be unremitting and intensive and results must be checked and rechecked.

The success of any safety program depends primarily upon the safety-mindedness of all levels of management of the company. Safety consciousness cannot be maintained in employees if they see no interest being taken in their efforts and accomplishments. It is a basic responsibility of the plant safety supervisors to see that executives, supervisory employees, and administrative employees demonstrate sincerity, and especially, set the proper example themselves by safe practices.

By the same token, the works manager should see that all levels of supervision always be ready and anxious to accept his help. It is a joint responsibility of the works manager and the safety supervisor to impress upon all employees that efficient operation and safe operation cannot be separated.

Of course, the safety supervisor must adhere to many control measures if he is to produce greater results in 1956. These include:

- Proper employee training.
- Proper inspection of facilities, equipment and work areas.
- Prompt accident investigation.
- Maintenance of adequate accident and injury rate records.
- Establishment and maintenance of a sound safety committee organization.



"Doc, dermatitis control is simple as 1-2-3-4-5."

An exaggeration?

Not at all. Occupational skin irritation can be prevented. Simply. At surprisingly little cost.

—with the WEST Dermatitis Prevention and Control Program that:

- 1—insures personal cleanliness
- 2—protects exposed skin areas
- 3—prevents clothing contamination
- 4—guards against special hazards
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WORKERS free of skin irritation can save you hundreds, perhaps

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THE WEST Program for controlling skin irritations is based on individual shop requirements and an in-your-shop survey, made without obligation. Let a WEST representative plan the details.

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- Close attention to personal protective equipment.
- A continuous education program designed to make all employees safety minded.

If I had to choose the one most critical safety supervision job factor it would be the "human relations" factor.

The works manager expects the safety supervisor to remember that he is, at all times, dealing with *people—not machines*. These people possess the same capacity for pain and suffering, disappointment, discontent, and feeling of neglect that he can experience.

Here are some of the things your works manager expects you to give attention to when you do a better job in 1956:

—Avoid a grudging attitude when someone asks for your assistance. Such an attitude does not go unnoticed. Everything you give will come back to you.

—Work just as hard when alone as when someone is watching you.

—Avoid the ancient and dishonorable pastime of "passing the buck." This practice can dissipate all of the good being accomplished in your department and throughout your plant.

—Don't be over-sensitive to honest criticism. Your manager has no room in his organization for people who resent having their shortcomings pointed out to them. Learn through your mistakes by correcting them.

—Face responsibility. Go that "extra mile." Accept every responsibility cheerfully and look for more.

—Generate a spirit of cooperation by impressing upon all employees the feeling that the safety department trusts and believes in the people who can make their plant a safe place to work.

—Get all the facts; always listen to both sides of every question. Don't be a self-appointed judge.

—Don't be a "worry bird." How many safety problems have you ever solved by worrying about them? Remind yourself now and then that "today is the tomorrow you worried about yesterday." The best way to insure your tomorrow is to do the best you can today.

—Solve your own problems and make your own decisions. If you expect other people to do this for you, watch out—they will be the ones who get ahead in the organization—not you.

—Avoid loose talk. Small talk and little people are usually found together.

—Make the people in the plant realize that you appreciate their efforts. The two words "thank you" go a long way in building human relations.

—Avoid sarcasm; it's one of the cruellest forms of conduct and it usually hurts someone. You cannot come up with a

successful program without getting along with people.

—Avoid bawling out people when they make mistakes. When you see a safety error being made, show the employee how to avoid such a mistake the next time. You will get along best with your safety program by helping others to get along.

—Avoid taking the credit for another's accomplishment. Be liberal with credit or praise.

—Say what you *know* to be true, not what you *think* people want to hear. If you do the latter you are simply

starting a chain of trouble for them and for yourselves. Truth presented with sincerity and tact will improve human relations and help the safety program.

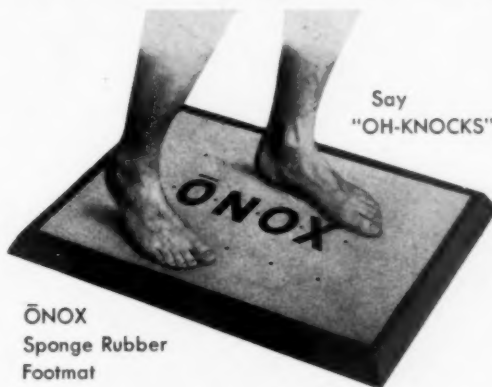
—Don't be the boss's pet. There is no place for unearned favoritism in any organization.

—Be decisive. Make decisions and stick to them.

—Cooperation isn't won by nagging, particularly about minor matters.

—Patience is needed to do a better job. If you are impatient, watch a spider build a web, watch an ant build an ant hill—or look at an old oak tree.

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Named Akron's "Safety Man of the Year"

JACK T. KIDNEY, manager of the Employees Service Division at The Goodyear Tire & Rubber Company, was named "Safety Man of the Year" March 21 at the thirteenth annual Greater Akron Safety Conference, sponsored by the Safety Council of the Akron Chamber of Commerce and the Industrial Commission of Ohio, division of Safety and Hygiene.

Presentation of the award was made by Tom Horner, *Akron Beacon Journal* editorial writer, who won the honor for 1954. The dinner concluded a one-day program of 13 sessions on safety in the home, in schools, on streets and at work.

Eighty-two safety awards were presented to companies in Summit County for job safety achievement. Ned H. Dearborn, president of the National Safety Council, was the keynote speaker.

A native of St. Johns, Newfoundland, Kidney attended high school and business college in Cleveland, Ohio. He joined Goodyear in 1915 as a secretary in the police department. Later he served as chief of plant protection before being promoted to his present post. In 1955 P. W. Litchfield, chairman of the Goodyear board, awarded Kidney a service emblem for 40 years of continuous service with the company.



Darkness invites panic, theft, injury Exide Lightguards* prevent sudden darkness



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"SAFETY MAN of the Year" Jack T. Kidney (left) receives award from Tom Horner, editorial writer, *Akron Beacon Journal*. Ned H. Dearborn, president of the National Safety Council (right), was keynote speaker.

Kidney is a member of the Ohio Society of Safety Engineers; National Safety Council; Veterans of Safety; Ohio State Safety Council; American Society of Safety Engineers; Subcommittee Chairman on Governmental Employees, President's Conference; vice-chairman, Akron Mayors Unity Committee; vice-president, Summit County Safety Council; executive vice-chairman, Safety Council, Akron Chamber of Commerce, and served five years as Chairman of the Civil Service Commission.

A trustee of the Family Service Society and the Akron Community Center, he has also been teaching accredited courses in safety and industrial management at the University of Akron for the past 10 years. During World War II, he served as a special agent for the Department of Labor.

You don't have to stay awake nights to succeed. Just stay awake days.

Safety Leaders

—From page 106

General Mills, Inc., Special Commodities Plant, Keokuk, Iowa.

Pillsbury Mills, Inc., Downingtown, Pa.

Group C
Pillsbury Mills, Inc., Astoria, Ore.
Pillsbury Mills, Inc., Atlanta, Ga.
Pillsbury Mills, Inc., Clinton Soy, Iowa.

Pillsbury Mills, Inc., Nashville, Tenn.
General Mills, Inc., Flour & Feed Mill, Ogden, Utah.

General Mills, Inc., Flour Mill, Great Falls, Mont.

International Milling Co., Salina Mill.
International Milling Co., New Prague Mill.

International Milling Co., Blackwell Mill.

International Milling Co., Capital "B" Mill.

International Milling Co., Ponca City Mill.

International Milling Co., Lockport Mill.

Ralston Purina Co., Jackson.
Ralston Purina Co., Omaha.
Ralston Purina Co., Denver.
Ralston Purina Co., Tampa.
Ralston Purina Co., Oklahoma City.
Ralston Purina Co., Pocatello.
Ralston Purina Co., Wichita.

National Biscuit Co., Carthage Flour Mill, Carthage, Mo.

Igleheart Brothers, Jell-O Div., General Foods Corp., Clarksville, Tenn.

Spencer Kellogg and Sons, Inc., Chicago.

Carnation Co., Albers Div., Kansas City, Mo.

Cooperative Mills, Inc., Statesville, N. C.

Division II

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General Mills, Inc., Cereal Plant, Lodi, Calif.

Group B

Maxwell House Div., General Foods Corp., Houston, Texas.

The Glidden Co., Chemurgy Div., Indianapolis, Ind.

Minute Tapioca, Jell-O Div. of General Foods Corp.

General Mills, Inc., Food Packaging Plant, Louisville, Ky.

General Mills, Inc., Oat Flour Mill, Keokuk, Iowa.

Ralston Purina Co., Ry-Krisp Plant.

I. J. Grass Noodle Co., Inc., Chicago.

Peter Paul, Inc., Philadelphia Div.

The Quaker Oats Co., Tecumseh, Mich.

Division III

Group A

Carnation Co., Evaporated Milk Div., Southwestern District.

Group B

Sheffield Farms Co., Inc., Chemical Co.

The Borden Co., Ltd., Tillsonburg, Ont.

Group C

Kraft Foods Co. of Wisconsin, Antigo, Wis.

Kraft Foods Co., Stockton, Ill.

Kraft Foods Co. of Wisconsin, Hartford, Wis.

Southern Dairies, Inc., Christiansburg, Va.

Southern Dairies Inc., Greensboro, N. C.

The Borden Co., Ltd., Belmont, Ont.

The Borden Co., Ltd., Kemptville, Ont.

The Borden Co., Wellsboro, Pa.

Kraft Foods Co., Galena, Ill.

Kraft Foods Co., Eldon, Mo.

Kraft Foods Co., Pinconning, Mich.

Division IV

Group A

Kekaha Sugar Co., Ltd., Kekaha, Kauai, Hawaii.

Group B

The Crosse and Blackwell Co., Baltimore, Md.

H. J. Heinz Co., Medina, N. Y.

Group C

General Foods Corp., Birds Eye Div., Hillsboro, Ore.

H. J. Heinz Co., Berkeley, Calif.

H. J. Heinz Co., Salem, N. J.

Libby, McNeill & Libby, Pauwela, Maui, T. H.

Libby, McNeill & Libby, Haiku, Maui, T. H.

Libby, McNeill & Libby, Nimbuss, Calif.

Libby, McNeill & Libby, Hammond, Ind.

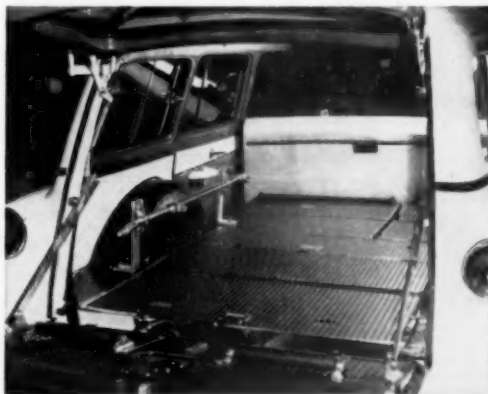


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Birds Eye Div., General Foods Corp.,
Santa Cruz, Calif.
Kraft Foods Co., Oakland, Calif.
W. N. Clark Co., Caro Plant.

DIVISION VI

Group A

Bayuk Cigars, Inc., Ninth Street
Plant.

General Cigar Co., Inc., Nanticoke,
Pa.

General Cigar Co., Inc., Division
Street, Kingston, Pa.

Group B

General Cigar Co., Inc., Mt. Carmel,
Pa.

Bayuk Cigars Co., Inc., Lancaster Leaf
Department.

DIVISION VII

Group A

Geo. T. Staggs Co., Frankfort, Ky.

Group B

Schenley Distillers, Inc., Lawrence-
burg, Ind.


Jas. E. Pepper & Co., Lexington, Ky.

Joseph E. Seagram & Sons, Inc., Mi-
lan, Ind.

National Distillers Products Corp.,
Pennsylvania Division.

Hiram Walker & Sons, Inc., Clarke
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DIVISION VIII

Group A

C. Schmidt & Sons, Inc., Philadelphia.

Group B

International Breweries, Inc., Frank-
enmuth (Mich.) Div.

DIVISION IX

Group A

National Biscuit Co., Portland, Ore.,
Bakery.

Group B

National Biscuit Co., Buffalo, N. Y.,
Cracker Bakery.

Interstate Bakeries Corp., Log Cabin
Div., Los Angeles.

Interstate Bakeries Corp., Weber
Baking Div., Glendale, Calif.

National Biscuit Co., Milk Bone Bak-
ery, Los Angeles.

Group C

National Biscuit Co., Denver, Colo.,
Bakery.

National Biscuit Co., Dayton Cone
Bakery, Dayton, Ohio.

Interstate Bakeries Corp., Weber
Baking Div., Santa Ana, Calif.

National Biscuit Co., Rochester, N. Y.,
Bakery.

Interstate Bakeries Corp., Weber
Baking Div., El Centro, Calif.

National Biscuit Co., Holland Rusk
Bakery, Holland, Mich.

National Biscuit Co., Plattsburg, N. Y.,
Bakery.

National Biscuit Co., Battle Creek,
Mich., Bakery.

FLUID MILK

Group A

Carnation Co., Fresh Milk Div., Tulsa,
Okla.

Group B

Southern Dairies, Inc., Jacksonville,
Fla.

Group C

Roberts Dairy Co., Sioux City, Iowa.
Central Dairy Products Co.

Southern Dairies, Inc., St. Petersburg,
Fla.

Sheffield Farms Co., West End, N. J.
Hygeia Milk Products Co., McAllen,
Texas.

Hygeia Milk Products Co., Browns-
ville, Texas.

Sheffield Farms Co., Hobart District.
Sheffield Farms Co., Central Penn-
sylvania District.

GLASS & CERAMICS

GLASS PRODUCTS

Group A

Owens-Illinois, Gas City, Ind.

Group B

Ball Brothers Co., Inc., Southwest
Div., Okmulgee, Okla.

CERAMICS

Group A

American Radiator & Standard Sani-
tary Corp., Tiffin Plant.

Group B

American Radiator & Standard Sani-
tary Corp., San Pablo Plant.

FLAT GLASS

Pittsburgh Plate Glass Co., Works
No. 6, Ford City, Pa.

MACHINE & MOLD SHOPS

Owens-Illinois, Oakland Central Mold
Shop

HOSPITAL

Group A

State Tuberculosis Hospital, Dist. One, Madisonville, Ky.

Group B

Vancouver Memorial Hospital, Vancouver, Wash.

Group C

St Therese Hospital, Waukegan, Ill.

Group D

U. S. Naval Hospital, Memphis, Tenn.

Group E

St. Joseph Hospital, Lorain, Ohio.

Group F

Missouri Baptist Hospital, St. Louis, Mo.

Group E

Brockton Veterans Administration Hospital, Brockton, Mass.

Group F

Jackson Memorial Hospital, Miami, Fla.

MARINE

SHIPBUILDING AND REPAIR—GOVT.

Group A

New York Naval Shipyard, Brooklyn, N. Y.

SHIPBUILDING AND REPAIR—PRIVATE

Heavy Yards

Electric Boat Div., General Dynamics Corp., Groton, Conn.

Light Yards

The Pittsburgh & Conneaut Dock Co., Conneaut, Ohio.

Dravo Corp., Engineering Works Div., Wilmington Plant.

Ashland Oil & Refining Co., River Repair Terminal.

HARBOR EQUIPMENT DIV.

U. S. Army, Corps of Engineers, Missouri River Div.

Ohio River Div., Corps of Engineers, U. S. Army.

Atlantic Coast Line Railroad Co., Port Tampa Terminals, Port Tampa, Fla.

STEVEDORING—General Cargo

Castle & Cooke Terminals, Ltd., Honolulu, Hawaii.

Cargo and Passenger Vessels

Ocean & Coastwise

United States Lines Co.

CARGO AND PASSENGER VESSELS

Private

Inland Waterways

Nicholson-Universal Steamship Div., Republic Steel Corp.

TANKERS DIV.

Ocean and Coastwise

Sun Oil Co., Marcus Hook, Pa.

Govt.

Group B

U. S. Coast Guard Yard, Curtis Bay, Baltimore, Md.

STEVEDORING DIV.

Bulk Cargo

Union Dock Co., Ashtabula Harbor, Ohio.

P & E Coal Dock Co., Erie, Pa.

The Erie Dock Co., Cleveland & Randall Docks, Cleveland, Ohio.

TANKERS DIV.

Inland Waterways

Socony Mobil Oil Co., Inc., New York.

Sun Oil Co., Marcus Hook, Pa.

The Texas Co., Marine Dept., Inland Fleet.

PAPER INDUSTRY

PULP & PAPER MILLS DIV.

Group A

Scott Paper Co., Chester, Pa.

Group B

P. H. Glatfelter Co., Spring Grove, Pa.

Group C

West Virginia Pulp & Paper Co., Williamsburg, Pa.

National Vulcanized Fibre Co., Yorklyn Plant.

Abitibi Power & Paper Co., Ltd., Fort William Div., Fort William, Ont.

Fraser Co., Ltd., Newcastle, N. J.

Group D

Certain-teed Products Corp., East St. Louis, Ill.

National Container Corp. of Virginia, Big Island, Va.

The Bartgis Brothers Co., Ilchester, Md.

United States Gypsum Co., Gypsum, Ohio.

Group E

Spaulding Fibre Co., Milton Plants.

National Gypsum Co., Garwood, N. J.

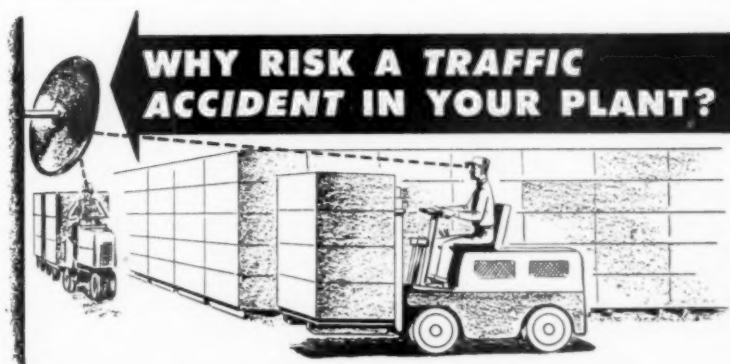
American Writing Paper Corp., Nonotuck Div.

Robert Gair Co., Inc., Middletown Plant.

The Flintkote Co., Mt. Carmel, Ill.

Amalgamated Roofing Mill, Div. of the Logan-Long Co., Chicago.

Kimberly-Clark Corp., Kapuskasing, Canada.



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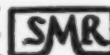
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Munroe Falls Paper Co., Munroe Falls.

National Vulcanized Fibre Co., Marshall Bros. Plant, Yorklyn, Del.

Hammond Bag & Paper Co., Wellsburg, W. Va.

PAPER BAGS GROUP

Converting Div.

Crown Zellerbach Corp., Los Angeles Converting Div.

Thilmany Pulp and Paper Co., Bag Mill—Kaukauna, Wis.

St. Regis Paper Co., Dryden Multi-wall Bag Plant.

Pillsbury Mills, Inc., Wellsburg, W. Va. BOXES AND CARTONS GROUP

Converting Div.

Group A

Container Corp. of America, Boston, Mass. (Container Div.)

Container Corp. of America, Chattanooga, Tenn. (Container Div.)

The Bartgis Brothers Co., Ilchester, Md.

The Mengel Co., Louisville, Ky.

Group B

Container Corp. of America, Cleveland, Ohio. (Carton Div.)

Container Corp. of America, California Container Corp. Div., Los Angeles.

Container Corp. of America, Chattanooga, Tenn. (Carton Div.)

Ft. Wayne Corrugated Paper Co., Rochester, N. Y.

Container Corp. of America, Baltimore, Md.

Container Corp. of America, California Container Corp. Div., Santa Clara, Calif.

Robert Gair Co., Inc., American Coat-

ing Mills Div., Grand Rapids, Mich.

Hoerner Boxes, Inc., Fort Worth, Texas.

Bay West Paper Co., Green Bay, Wis. ROOFING PAPER GROUP

Converting Div.

Bird & Son, Inc., Roofing Plant, Chicago.

Certain-teed Products Corp., Kansas City, Mo.

The Ruberoid Co., Minneapolis, Minn.

The Flintkote Co., Pioneer Div., Portland, Ore.

INSULATION AND BUILDING BOARD GROUP

Converting Div.

Armstrong Cork Co., Macon Plant. SPECIALTIES GROUP

Converting Div.

International Paper Co., Kansas City, Kan.

Lily-Tulip Cup Corp., Monticello, Ind., Plant.

PULPWOOD LOGGING DIV.

St. Regis Paper Co., Bucksport Woodlands Div.

PETROLEUM

MANUFACTURING DEPARTMENT

Entire Company

Group A

Lion Oil Co., Div. of Monsanto Chemical Co., El Dorado, Ark.

Group B

The Ohio Oil Co., Manufacturing.

Manufacturing Department

Individual Plant

Group A

The Texas Co., Refining Department

—Miscellaneous.

Group B

Lion Oil Co., Div. of Monsanto Chemical Co., El Dorado Chemical Plant.

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Wholesale Marketing Dept.

Group A

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Group B

Leonard Refineries, Inc., Alma, Mich.

Retail Marketing

The Standard Oil Co. (Ohio), Marketing (Retail), Cleveland, Ohio.

Drilling Dept.

Group A

Phillips Petroleum Co., Drilling Div.

Group B

General Petroleum Corp.

Producing Dept.

Group A

Phillips Petroleum Co., Producing Div.

Group B

Seaboard Oil Co.

Natural Gasoline Dept.

Group A

Phillips Petroleum Co., Panhandle District.

Group B

General Petroleum Co.

Oil and Gas Pipe Line Dept.

Group A

The Buckeye Pipe Line Co.

Group B

Mid-Valley Pipeline Co.

Exploration Dept.

American Oil Co. & Subsidiary Companies, New York.

Research and Development Dept.

The Atlantic Refining Co., Research and Devel., Philadelphia.

PRINTING AND PUBLISHING

Group A

Chicago Carton Co., Chicago.

Group B

Palladium Publishing Corp., Richmond, Ind.

PUBLIC UTILITIES

COMBINATION GAS AND ELECTRIC DIV.

Group A

Baltimore Gas and Electric Co.

Group B

Wisconsin Power & Light Co., Madison.

Group C

Interstate Power Co., Dubuque, Iowa.

Group D

Superior Water, Light & Power Co., Superior, Wis.

Monoton Electricity and Gas Co., Ltd. GAS DIV.

Group A

The East Ohio Gas Co., Cleveland.

Group B

The Peoples Natural Gas Co., Entire Co.

Group C

Nashville Gas Co.

Group D

Gas Light Co. of Columbus, Ga.

Water, Gas & Sewage Treatment Dept., City of Duluth.

Lawrence Gas Co.

The River Gas Co., Marietta, Ohio.

Northampton Gas Light Co., Northampton, Mass.

Lynchburg Gas Co.

Concord Natural Gas Corp., Concord, N. H.

ELECTRIC DIV.

Group A

Alabama Power Co., Birmingham.

Group B

Metropolitan Edison Co., Entire Co.

Group C

Tampa Electric Co., Fla.

Group D

Kentucky Power Co., Ashland.

The Lowell Electric Light Corp., Lowell, Mass.

Lawrence Electric Co., Lawrence, Mass.

Quincy Electric Co., Quincy, Mass.

Kingsport Utilities, Inc.

Price Brothers & Co., Ltd., Kenogami Hydro-Electric Dept.

Northern Berkshire Electric Co., North Adams, Mass.

Southern Berkshire Power & Electric Co.

Granite State Electric Co., Lebanon, N. H.

Maquoketa Valley Rural Electric Cooperative, Anamosa, Iowa.

Public Utility District No. 1 of Clallam County, Port Angeles, Wash.

Amesbury Electric Light Co., Amesbury, Mass.

Waterworks Div.

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RUBBER

Group A

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Group C

Goodyear Tire & Rubber Co., New Bedford, Mass.

Group D

United States Rubber Co., Washington, Ind.

Group E

Goodyear Tire & Rubber Co., RRC Akron.

The Firestone Tire and Rubber Co., Research Laboratory.

B. F. Goodrich, Works Technical Laboratories.

Goodyear Tire & Rubber Co., Reclaim, Akron.

The Firestone Plastics Co., Pottstown, Pa.

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Armstrong Cork Co., South Gate Plant.

University of Akron, Government Laboratories.

United States Rubber Co., Burlington Plant.

Dominion Rubber Co., Ltd., Latex & Reclaim Div., Montreal, Quebec, Canada.

Canadian Lastex Ltd., Montreal, Quebec.

The Firestone Tire and Rubber Co., Akron Retread Shop.

Gates Rubber Co. of Canada.

The Lobl Mfg. Co., Middleboro, Mass.

TEXTILE

DIVISION I

Group A

B. F. Goodrich—Marth Mills, Textile Div., Thoraston, Ga.

Group B

Union Bleachery, Greenville, S. C.

Group C

Medical Supply Co., Rockford, Ill.

DIVISION II

Group A

United States Rubber Co., Winnsboro Mills, S. C.

Group B

Greenwood Mills, Durst Plant, Greenwood, S. C.

Group C

Forstmann Woolen Co., Worsted Mill.

TRANSIT

DIVISION I

St. Louis Public Service Co., St. Louis, Mo.

DIVISION II

New Orleans Public Service Inc., Transit Operations.

DIVISION III

American Industrial Transport, Inc., Oak Ridge, Tenn.

WOOD PRODUCTS

Logging Div.

Group A

Weyerhaeuser Timber Co., Snoqualmie Falls Branch—Logging.

Group B

Fruit Growers Supply Co., Susanville (Calif.) Operation.

Sawmills Div.

Group A

C. D. Johnson Lumber Co., Div. of Georgia Pacific, Toledo, Ore.

Group B

British Columbia Manufacturing Co., Ltd.

Group C

Boise Payette Lumber Co., Council, Idaho.

American Forest Products Corp., Sawmill.

Plywood and Veneer Div.

Group A

Algoma Plywood & Veneer Co., Algoma, Wis.

Group B

General Plywood Corp., Tarboro Div.

United States Plywood Corp., Kosmos Veneer Div.

Furniture Div.

Kroehler Mfg. Co., Cleveland, Ohio.

The Mengel Co., St. Louis, Mo.

Wood Preserving Div.

Group A

Koppers Co., Inc., North Little Rock, Ark.

Canada Creosoting Co., Ltd., Delson Plant.

Group B

Canada Creosoting Co., Ltd., North Vancouver Plant.

Koppers Co., Inc., Superior, Wis.

Cooperage Div.

Brown-Forman Distillers Corp., Blue Grass Cooperage Co., Finishing Div.

Louisville Cooperage Co., Plant #2, Louisville, Ky.

Chess & Wymond Co., Louisville, Ky. Retail Lumber Yards Div.

Weyerhaeuser Timber Co., St. Paul.

Weyerhaeuser Timber Co., Tacoma Office.

Box Manufacturing Div.

Potlatch Forests, Inc., Lewiston, Idaho. American Forest Products Corp., Box

Factory.

Woodworking Div.

Group A

Curtis Companies, Inc., Clinton (Iowa) Div.

Group B

American Excelsior Corp., Marinette Div.

Wood Shingles Div.

Canadian Forest Products Ltd., Hunting-Merritt Shingle Div.

Forestry Div.

Group A

U. S. Forest Service, Lake States Region, Milwaukee, Wis.

Group B

U. S. Forest Service, Intermountain Forest Experiment Station, Ogden, Utah.

U. S. Forest Service, Pacific Northwest Forest Experiment Station, Portland, Ore.

U. S. Forest Service, Central States Forest Experiment Station, Columbus, Ohio.

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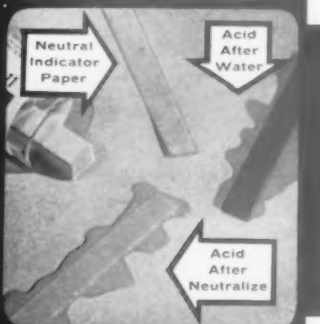
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When acid or alkalies splash eyes or skin, Neutralize works for immediate relief and prevents severe burns. No dangerous time loss determining if chemical is acid or alkali—Neutralize counteracts both. Try this test—you can do it yourself!



E. D. BULLARD COMPANY, 275 Eighth St., San Francisco

BULLARD

Diary

—From page 14

considerable headway. My own records supplied a clue here—a report of water damage from leaking sprinkler pipe a week before in a basement room near the print shop.

We ran that down and, sure enough, some old pipe had developed a pinhole leak. Plumbers had cut off the water supply from a large area, including the print shop. They then repaired the pipe. They swear that they turned the water valve back on, and perhaps we can't prove that they didn't. But if they did, then somebody else turned the valve off again, which isn't likely.

At any rate, the fire got its start in just the area cut off by that valve, and by the time sprinklers in adjoining areas functioned, it was already near the time of structural failure of the building which presumably broke the water lines.

When we make these assumptions of cause of fire and cause of sprinkler failure, we are still up against the fact that what was basically wrong was the building itself. Anything in the way of fire-resistant construction would have confined the fire and cut loss to a minimum.

Of course there was negligence—in the print shop crew, in the sweepers, in the plumbers. Sure, it took a peculiar combination of negligences to produce a bad fire.

But what I'm going to tell the superintendent is that a building like that is just like a dry Christmas tree lit by candles.

You can arrange the candles so they avoid flame contact with branches. You can keep a large pail of water handy to put out the fire if it starts. You can warn the kids not to monkey with it, and you can try to keep the Christmas package wrappings picked up. You can arrange to have some member of the family check it frequently.

But when you've done all those things—you still have a terrible fire hazard. Sooner or later, somebody does some small thing they aren't supposed to do, and whoosh—disaster.

So, it seems clear to me, we must get rid of the old firetraps. I'm willing to ride with them until they can be replaced, to preach housekeeping and proper maintenance, proper protection both mechanical and human. But we are operating these old buildings under conditions where a combination of failures which is almost certain to recur from time to time leaves us wide open to trouble. They simply have to go.

Home Accidents Kill More Men Than Women

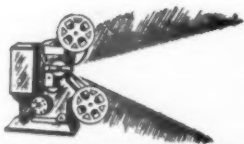
STATISTICS from the Metropolitan Life Insurance Company indicate that do-it-yourself activities are responsible only to a very minor extent for the fact that home accidents kill about twice as many men as women at the main working ages.

About six per cent of the company's male industrial policyholders from 15 to 64 years old who died in home accidents during 1953 and 1954 were fatally injured while they were engaged in repair, maintenance, or improvement work. The do-it-yourself victims included men who fell from ladders, roofs, or scaffolds while painting the exterior of the house, while shingling or repairing the roof, or while adjusting or installing television aerials on the roof.

The study showed that almost every type of accident in and about the home took a higher death toll among men than among women. Prominent among these causes of fatal injury were falls, fires, gas poisoning, and firearm accidents. The greatest excess male mortality from firearm mishaps in the home occurred in adolescence and early adult life.

A relatively unimportant cause of death in the home was due to electric current. Some of the fatal accidents occurred when men came into contact with high tension lines while adjusting or installing television aerials on the roof, or when they came into contact with ordinary current while working in the home.

No opportunity is ever lost. The other fellow takes those you miss.



SAFETY FILMS

For further information on publications or films listed here, write Nancy Lou Blitzen, Film Consultant, Membership Service Bureau, National Safety Council

Film Directory

The fourth annual edition of the *National Directory of Safety Films* will be available in June 1956. It will not be included in the June issue of *NATIONAL SAFETY NEWS* as it is now only available from the National Safety Council for purchase.

It will contain descriptions of some 1,300 safety films, of which 100 were produced or released in 1955 and the first part of 1956. These films will be available from one or more of 292 sources which distribute films on a national and international basis.

In addition to the films and sources, the *Directory* will include a section devoted to film distributors, listed by city and state, which make their safety films available either for free loan or small-fee rental. A "Fine Subject Index" and alphabetical listing of films will also be included.

A single copy of the *Directory* will sell for \$1.00. Quantity prices will be given on request.

Fire Prevention—Industrial

Fatal Hour (35mm sound slide-film) black & white. 15 minutes. Production date, 1955.

This filmstrip and record dramatically demonstrate the importance of fire prevention in industry by showing how carelessness in a plant causes the death of an employee. Included are sequences on the causes of fires and fire-fighting methods.

Prints are available for purchase and loan from local Zurich Insurance Company agents or from Zurich Insurance Companies, 135 S. LaSalle St., Chicago 3.

Material Handling

Truck Amuck (35mm sound slidefilm) black & white. 15 minutes. Production date, 1955.

This filmstrip and record illustrate the principles of safe operation of lift trucks. In a humorous

fantasy, a lift-truck operator daydreams himself into a bull ring where the bull is his much abused lift-truck come to life.

Prints are available for purchase and loan from the same source as *Fatal Hour*.

First Aid

Early Handling of Spinal Injuries—Accidents Don't Happen Series (16mm sound motion) black & white. 18 minutes. Production date, 1956.

This film, sponsored and produced by the National Film Board of Canada, is another addition to the series, *Accidents Don't Happen*. It shows what must be done in the way of on-the-spot first aid when back or neck injuries are suspected or occur. Animation illustrates the structure of the spinal column and shows how partial or complete paralysis may result if the injury is not handled properly.

A detailed demonstration then follows on the techniques of moving a victim with a suspected back injury. Demonstrations are also given in various locations, such as an industrial plant and a logging camp.

Prints are available for purchase and preview from the National Film Board of Canada, Ottawa, Ont. and in the United States from United World Films, Inc., 1445 Park Ave., New York, and International Film Bureau, Inc., 57 E. Jackson Blvd., Chicago.

Petroleum

Safety On a Round Trip (16mm sound motion) color. 15 minutes. Production date, 1955.

This film, sponsored by the American Association of Oilwell Drilling Contractors, shows the safety precautions that must be practiced by the drilling crew on a drilling rig. Such things as wearing hard hats, hard-toed shoes, checking for slippery surfaces,



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A touch of the button on top of the F.O.B. container brings instant relief to painful burns from sun, fire, electricity or scalds. F.O.B. aids healing and protects against infection. It is non-toxic, non-irritating, and can be safely sprayed on any part of the body.



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For treatment of chemical and heat burns. Available in 3, 5 and 11 oz. spray containers. Write for laboratory test reports on F.O.B. with specifications for new Burn Kits.



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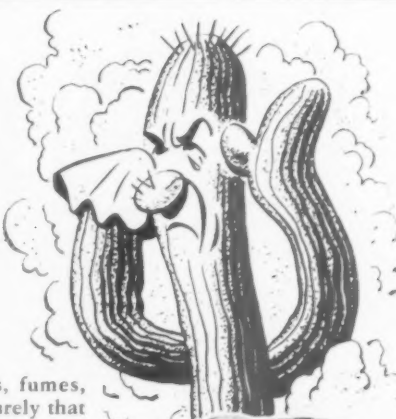
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YOU NEED... FOG-PROOF, GAS-TIGHT GOGGLES

...for paint spray, gases, dusts, fumes, smoke. They hug your face so securely that hazardous outside elements cannot reach your eyes. Fog is removed from lenses by an easy nod or shake of the head. The few drops of water placed on the inner wall of the lens do the trick. Can be worn with any respirator. Sample, \$2.00 postpaid.

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loose objects that could fall, safety belts, life lines, etc. are covered. The stress is on teamwork and the responsibility of each crew member for his own and others' safety.

Prints are available for purchase and rental from the American Association of Oilwell Drilling Contractors, 321 Insuromedic Life Bldg., 505 N. Ervay St., Dallas, Texas.

Public Utility

Start With Safety (16mm sound motion) color. 12 minutes. Production date, 1955.

By showing the planning, safety devices and precautions necessary on various jobs of a medium-size gas distribution company, this film tries to point out a four-point plan for safe work and working conditions. It is sponsored by the American Gas Association.

Prints are available for purchase and loan from the American Gas Association, 420 Lexington Ave., New York.

Cutter Blade Housing Protects Three Ways

A NEWLY-DEVELOPED protective housing for cut-off saws provides three safety features. It prohibits



the operator's hands from coming in contact with the blade, it eliminates chips flying about, and it contains dust.

The operator simply slides aluminum tubing along the guide until it hits a stop which can be adjusted for various lengths. Then by touching a pedal the cut is made by the blade.

The housing was developed and is used by Walter Kidde & Company, Inc., Belleville, N.J.

Calendar Contest Winners For March 1956



First prize of \$100 in the National Safety Council's Safety Calendar Contest goes this month to Max Koffler of New York. The theme in this contest was dress for safety—wear your goggles. Mr. Koffler's line was adjudged the best of all those submitted. It was:

Take our time, slip on our goggles—save your eyes!

Second prize of \$50 went to Orizon D. Edson of Catskill, N.Y., for this line:

Vote "no" on goggles and the "eyes" will take it.

Third prize of \$25 was awarded to Ray E. Peterson of Denver, Colo., for the following line:

The fellow who'd like your job promised he'd wear goggles!

Thirty \$5.00 awards were issued to:

Edward J. Simko, Crucible Steel Co. of America Park Works, Pittsburgh 1, Pa.

June Heyer, Safety Department, A. B. Dick Company, Berwyn, Ill.

T/Sgt. Harold H. Anderson, ground safety technician, United States Air Force, New York.

Mrs. Emily Petersick, Torrington, Conn. (Individual Member).

Clifford J. Louviere, shipping clerk, Pan American Southern Corp., Destrehan, La.

Mary Carter Slosarz, Indianapolis, Ind. (Individual Member).

Mrs. Olga Jason, New Bedford, Mass. (Individual Member).

Mrs. Josephine McGlamery, Cottdale, Fla. (Individual Member).

Raymond H. Welsh, clerk—Time Dept., Pittsburgh & Conneaut Dock Co., Conneaut, Ohio.

Jack R. Davis, district distribution supervisor, Southern California Gas Co., LaCrescenta, Calif.

R. H. Rossiter, assistant chief storekeeper, Silas Mason Co., Burlington, Iowa.

Earle F. Baker, Sheet Fabrication Dept., Continental Steel Corp., Kokomo, Ind.

—Turn page

the odds are 99 to 1 you'll want a Miller BAK-SAVER



A new concept in safety belts for linemen—the Miller BAK-SAVER No. 99 with contoured wide-width back span for complete comfort, safety and support. The BAK-SAVER is made of strong, lightweight leather, perforated for ventilation and designed for greater freedom.

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Make your plant safer with "SAFETY-WALK"

Here's the new mineral-coated fabric that provides perfect traction—sure footing—even under water or grease! Patterned in strips, tiles and cleats for a variety of purposes, it goes on in minutes—lasts for years. And it's easy to

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SAFETY-WALK
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FROG BRAND®

illustrated
above:
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- guaranteed not to peel, blister or crack in ordinary usage!
- double interlocked sewn seams that can't come apart!
- solid brass or non-conductive fastenings that can't rip off or corrode!
- designed for roomy, action-free comfort!

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Stanley H. Magawa, dock foreman, Century Matthews Motor Freight Co., Grand Rapids, Minn.

H. G. Harwood, supervisor, O&R Dept., Naval Air Station, San Diego, Calif.

Mrs. Carl Keys, Sinclair Oil & Gas Co., Tulsa, Okla.

Arthur L. Handley, Sr., administrative assistant, Hq. Third Army, Atlanta, Ga. (Individual Member).

Robert Kershaw, tester, Consolidated Edison Co., New York.

Dante Innocente, Scheduling, Mossberg Pressed Steel Corp., Attleboro, Mass.

Mrs. Edna Trevillian, Chloride, Ariz. (Individual Member).

Miss Lucille Thies, Manteno, Ill. (Individual Member).

Don Marshall, Carrier Corporation, Monrovia, Calif.

Richard W. Eller, chemist, E. I. duPont de Nemours, Waynesboro, Va.

Mrs. William B. Rehse, Armco Steel Corp., Middletown, Ohio.

Mrs. P. Murrell Bagwell, American Cyanamine, Hazard, Ky.

R. J. Woods, electrician, Atlantic Refining Co., Philadelphia.

Miss Virginia M. Davis, secretary,

New England Power Service Co., Boston.

Miss Elizabeth J. Moore, stenographer, Carolina Power & Light Co., Asheville, N.C.

Robert C. Petersen, instrumentman—Engineering Dept., Great Northern Railway Co., Superior, Wis.

Harold J. Schaefer, lab. janitor, Hercules Powder Co., Parlin, N.J.

Wire From Washington

—From page 10

formation determining the causes and means for preventing or reducing accidents."

Other bills move in this same general direction. H. R. 10309 would make it a criminal offense to sell, ship or transport automobiles in interstate commerce unless accompanied by a manufacturer's certificate of fitness which states, among other things, that the car and all its parts and accessories have been inspected and found in good working order, "safe and ready for operation on

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DRY TAMP MEANS SPEED • No sticky mass to dig out of the drum or to handle • Permix dry pours • sets instantly • feather edges perfectly • no production delays • non-skid surface.



ALL TEMPERATURE • Won't freeze • can be stored or used in any temperature • will store indefinitely • a stock room item • will not "set" in drum whether open or covered. Mistakes just can't happen. Tamp in place and traffic rolls.



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the public highways." H. R. 10310 would accomplish the same objective, in another form, in order "to promote safety in the operation of motor vehicles."

The sponsor of these bills, Congressman Multer of New York, stated his view that many accidents are due to "inherent defects in the automobile that were there when it left the factory."

The Senate passed S. 898, to amend the Interstate Commerce Act so as to permit the leasing of trucks to carry agricultural produce to markets, such leases being to other operators for return trips. The purpose of the legislation is to nullify a ruling of the ICC barring truck leases of less than 30 days, an administrative effort to control so-called "gypsy" operators. The safety aspect of this legislative proposal is the allegation by some of its opponents that trip-lease truckers largely operate outside of the reach of the ICC's safety requirements.

H. R. 9911 would provide for the procurement by the govern-

ment of insurance against risk to civilian personnel, of liability for personal injury or death, or for property damage, arising from the operation of motor vehicles in the performance of official government duties.

Progress is being made on highway construction legislation. H. R. 9074 was approved by the House Ways and Means Committee, to provide new user-taxes to pay for an expanded program. And H. R. 8836 has been approved by a subcommittee of the House Public Works Committee, to provide for a 13-year Federal program, of a \$24.8 billion scope, with the Federal government paying 90 per cent of the cost of completion of the interstate highway system.

Young bride: "I'll take a few of your beets if they're live ones."

Grocer: "Live ones, ma'am?"

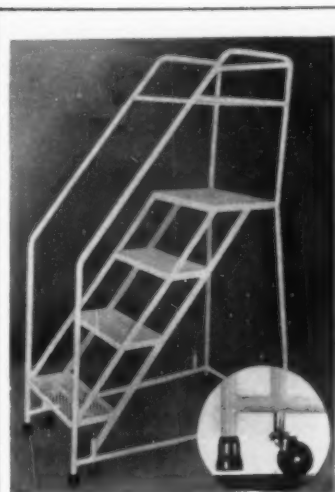
Young bride: "Oh yes, I must have live ones. I heard my husband say he has no use for dead beets."

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FALLS ACCOUNT FOR **17% OF ALL
DISABLING INJURIES...19% OF FATAL
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OF PERMANENT PARTIAL INJURIES, &
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FROM "ACCIDENT FACTS" 1955 EDITION



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Inter-American

—From page 42

Petroleum Corp.; R. W. Davidson, vice-president and chief engineer, Ebasco International Corp.; Frank M. Byrnes, assistant treasurer, Chile Exploration Co.; Douglas Campbell, vice-president and general manager, Pan American-Grace Airways; R. Maynard Toelle, casualty underwriter, American Foreign Insurance Association; J. W. Mather, vice-president, Lone Star Cement Corp.; Dr. W. A. Cutter, assistant director, Center for Safety Education, New York University.

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W. T. Rogers, safety director of Ebasco Services Inc., is managing director and J. G. Sealy, safety engineer of Ebasco Services, is technical advisor.

Any organization, company, or individual interested in safety in Latin America is eligible for membership in the Council. Applica-

tion forms and information regarding operations and services may be obtained, without obligation, by writing Inter-American Safety Council, Two Rector Street, New York 6.

Scientist Forms Consulting Firm for Air Pollution

ORGANIZATION of a firm for general consultation on air pollution has been announced by Wesley C. L. Hemeon, presently engineering director of Industrial Hygiene Foundation and Senior Fellow of Mellon Institute. Mr. Hemeon will resign from his present post next month to become a director of the new firm, to be known as Hemeon Associates. Headquarters offices and laboratory will be in the Loeffler Building at 121 Meyran Avenue, Pittsburgh, Pa.

Heading a staff of specialists in various aspects of air pollution will be George F. Haines, Jr., as chief engineer, also at present a Fellow of Mellon Institute. Mr. Haines has been associated with Mr. Hemeon for the past 10 years in various researches on dust control, air pollution and industrial hygiene.

The staff will be supplemented by a team of consulting associates which will completely embrace the several fields of chemistry, engineering, meteorology, plant physiology and pathology, and wind tunnel aerodynamics.

Consulting associate in meteorology will be Maynard S. Smith, Brookhaven National Laboratory, Upton, Long Island, who is a nationally-known authority on the dispersion from chimneys of air pollutants in the open atmosphere.

On special chemical problems the services of Professor J. K. Cholak, Kettering Laboratory in the Department of Preventive Medicine and Industrial Health, College of Medicine, University of Cincinnati, will be available in his capacity as consulting associate in air pollution chemistry.

Professor Gordon Strom of the Department of Aeronautical Engineering at New York University will be consulting associate on problems involving miniature studies in the model wind tunnel which will be constructed at the firm's Pittsburgh laboratory.

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**CUTS
CAR
UNLOADING
TIME**



The B & J Safety Friction Wrench releases instantly and requires only slightest pressure on handle to operate . . . and it can be positioned in a matter of seconds. Its conical head turns inside two shoes so handle cannot spring up and injure workers.

The B & J Safety Friction Wrench is simple in design, strong in construction to give years of durable, trouble-free service—no springs, bolts or ball bearings to cause trouble; no panels or triggers to catch. Fits 2" square of door-opening gear. Special sockets available for other sizes.

See for yourself how the B & J Wrench cuts car unloading time. You won't be disappointed—order one today.

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Keep Plant Air CLEAR of Welding Fumes

Welding shops equipped with Ruemelin Fume Collectors are assured of a clean, healthful atmosphere. Harmful fumes, heat and smoke are eliminated at their source, before they have a chance to spread throughout the shop. This lessens fatigue . . . improves working conditions . . . paves the way for increased plant production. Ruemelin Fume Collectors are approved by Industrial Commissions and insurance companies. Thousands in service. Available with 9 ft., 15 ft., 17 ft. and 20 ft. reach. Write for Bulletin No. 37-E.

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Positive Protection Against Organic Vapors

- Lightweight — 7.6 ounces complete.
- Replacement cartridges individually packaged — protected from heat, moisture, vapors.
- Flexible aluminum body quickly molded to fit any facial contour.
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Write for Complete Data and Quantity Prices.

Around the Compass

—From page 53

has been a pioneer in traffic safety and safety education. Our industries, too, have established remarkable records for accident-free operation. The city is participating in the development of an Eastbay Home Safety Program.

"But so long as tragic, preventable accidents still occur, we must redouble our efforts. Our permanent Green Cross organization needs the financial support and active participation of all groups and individuals in the community."

Phillips to New Haven

Albert L. Phillips has been appointed executive director of the New Haven Safety Council, New Haven, Conn., following the retirement of Julian Harvey. Prior to his appointment, Mr. Phillips served as staff member of the Safety Council of Western Massachusetts. He is a graduate of American International College, with a degree in Personnel and Business Administration. His professional background includes industrial production, personnel and safety work.

Mr. Phillips attended the recent Institute for Safety Council Managers, held at New York University.

Central States Meet

Industrial safety was given strong emphasis at the Central States Safety Conference, held April 10-12, at the Chase Hotel in St. Louis. Sponsors of this year's Conference were the Safety Council of Greater St. Louis and St. Louis Chapter, American Society of Safety Engineers. Sessions that drew large attendance included industrial noise, fire prevention, programs for small plants, traffic, home, and federal-state-and-city sessions.

Displays and demonstrations presenting the newest in protective devices, equipment, clothing, and safety promotion were also exhibited.

"A New Look In Industrial Accident Prevention" was the subject of the all-Conference luncheon speaker, George W.

Harper, superintendent, Division of Safety Inspection and Education, Illinois Department of Labor, and associate professor, Mechanical Engineering Department, University of Illinois.

Presentation of awards to winners in the Safety Council's 1955 Inter-Fleet Safety Contest were made by B. H. Sweeney, president, Safety Council of Greater St. Louis, and resident manager, Fisher Body Division, General Motors, at the Commercial Vehicle dinner. Ross C. Shannon, Ross Shannon and Associates, St. Louis, spoke on "Safety and Supervision" at the General Industrial dinner.

Sanitation to be Featured At Safety Conference

SYDNEY BRIERLEY, national president of the Industrial Sanitation Management Association, will head a discussion of various aspects of in-plant sanitation as a feature of the Genesee Valley Safety Conference program in Rochester in May.

The three-day conference at the Rochester Chamber of Commerce, May 22-24, will cover many approaches to safety in the home, at school, in industry, and on the highways.

Brierley, who is associated with Eastman Kodak Company, said the sanitation panel represents the first instance of participation by the sanitation association in a safety meeting. But it is a logical step, he added, saying, "Good housekeeping and safety go hand in hand; they are frequently one and the same thing."

The panel is to be called "Sanitation—Our Industrial Way of Life." Beside Brierley, it will include William Rogenmoser, superintendent of buildings and grounds, Lockport Board of Education; Mrs. Ruth Schoener, executive housekeeper, Roswell Park Memorial Institute, Buffalo, and Michael F. Stanley, maintenance supervisor, Taylor Instrument Companies, Rochester.

It takes 65,000 gallons of water to produce one ton of finished steel, 5,000 gallons to grow a bushel of corn. Don't waste it, drip!

Inland Waterways

—From page 19

a few—wider decks with protective bulwarks, night lights to prevent stumbling over fittings, and guards on all exposed working parts of machinery in the engine room. The engines themselves are encased to afford maximum protection.

Safety of the crew is a subject in itself, and this article is devoted primarily to the property damage aspect of safety and its relationship to the growing need for improved performance in the face of increasing competition. That improvement is dependent upon decreasing accidents to crew as well as to equipment is undeniable.

With the active cooperation of the National Safety Council, Federal Barge Lines is presently engaged with other barge lines and with the unions representing our crews in working out a coordinated and effective program to minimize personal injuries.

Barge innovations during my few years as a witness have been quite startling. Metal has replaced wood, welding has been substituted for riveting, gunnels are now wide enough for men to work on with safety. On the few occasions when pumping is necessary, it is done easily with mobile gasoline or electric pumps.

When it became necessary to push traffic upstream as well as down, barge rakes and shapes were streamlined to permit easy passage against the current. This was a big improvement, and engineers and marine architects have found many other ways to increase barge efficiency.

The integrated and semi-integrated tows are good examples of improved barge design, permitting drafts of 8½, 9, and even 10 ft. One of our integrated tows is 1,200 ft. long, 54 ft. wide, has an upstream speed of about eight miles per hour, a downstream speed of about 13 miles per hour, and a cargo capacity of approximately 12,000 tons.

All of these changes, and a good many more, have been necessary to meet constantly increasing

competition. One would think that this vastly improved equipment would have resulted in increased efficiency and safety. Unfortunately, I'm not sure such is the case.

Let's take a look at the crews of these modern fleets. Has human efficiency kept up with the progress in equipment? There is no way to streamline a crew's performance by the same kind of mechanical engineering that has revolutionized the design of towboats and barges.

The fact is that today's riverman is the same sort of man as those with whom I first worked, with one major exception: all too often he lacks sufficient experience to do the best possible job.

Why is this so? There are several reasons.

- Rapid expansion of our industry. Within the last 10 years, one midwestern shipyard alone has added 74 towboats and 581 barges to the river fleet. This tremendous expansion has caused the thin spreading of experienced men on vessels.

- Unions have not been able in all instances to provide us with the caliber of experienced men needed on these modern towboats. Many union officials have become aware of this problem and are now doing their best to help us solve it.

- Crews work less time than before, and so require a longer period to reach competency. Present time off is one-half day for each day worked; in three years, crew members will receive a full day off for each day on the job. Thus, the crew complement will be increased from the present three crews to four crews for each vessel, a further spreading of experienced men.

What does all this mean? It means that we are faced with a serious problem—the safe achievement of improved performance. As competition stiffens, crews are expected to increase efficiency, make faster runs, push larger tows, and load barges deeper. In consequence, management, labor, and all who have a stake in our industry must continue to concentrate every possible effort to keep the efficiency of our man-

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power up to the ever higher standards demanded by new equipment and new techniques.

To illustrate the importance of this problem in barge transportation, I should like to mention four aspects of modern operation where greater production accompanied by efficiency and safety would appear possible only by improving standards of human performance.

1. Today's powerful towboats handle tows from 600 to 1,200 ft. long, or even longer, with cargoes of 10,000, 15,000, 20,000 tons, or even more. Further increases in tow size and tonnage can be made possible only by continuing careful selection of the most capable crews.

2. Loading of barges to ever deeper drafts to take advantage of every available inch of channel depth will require constantly higher standards of skill in piloting.

3. Further progress in navigation in fog and foul weather in order to achieve a continuing increase in the percentage of "time underway" similarly requires the constant development of new piloting skills—skilled utilization of such new navigating aids as radar and fathometers; skill in the use of future navigation aids, such as the automatic-pilot equipment now under development.

Lastly, further reduction of the time involved in passing through locks, and in pick-up and delivery of barges is going to demand higher crew standards. (In recognition of this problem, the Army Engineers are now building river locks 1,200 ft. long instead of the 600-ft. standard of a few years ago.)

Certain conclusions are evident in these facts:

Competition has forced the barge industry to improve performance both by increasing the size of tows and by making faster, more frequent runs.

This has been accomplished by employing more powerful towboats, more efficient barge design, and increasing "time underway."

Improved performance threatens to increase hazards to personnel and equipment.

And finally, while today's equipment is equal or more than

equal to today's operational demands, the level of human competence—the percentage of capable, experienced river men among our boat crews—has been driven downward by those same operational demands.

What to do about it? The answer is obvious. We need a broad program aimed at bringing the capabilities of our boat crews up to the capabilities of modern barge line equipment.

The details of such a program must be worked out with great care, but its broad outlines are clear enough.

We must first establish a system of proficiency testing, to make sure that the green hands we hire have the necessary natural ability to become good deckhands, good engineroom men—and that a high percentage can go on to become mates, pilots, and engineers.

Once we have determined that an applicant for a towboat job has the necessary mental, physical and emotional equipment, we must give him sufficient preliminary training, both afloat and ashore, to give him a good safety margin in the early years of his towboat career.

Even after a man has become an experienced boat crew member, we must give him periodic on-the-job training—both refresher courses to assure that he maintains the necessary skills, and training courses to give him new skill in the use of the new equipment and the new operating techniques that are constantly being evolved in these days of technological progress.

Such a program of education is not the responsibility of any one element in the barge line industry, as I see it—not of the unions alone, nor of the companies, nor of the insurance underwriters. Rather it is a responsibility that all of us must share, and an expense which would be far outweighed by improved standards of safety and performance.

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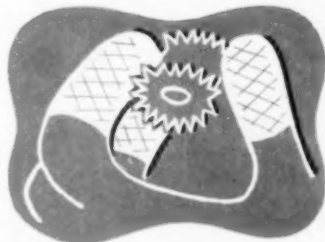
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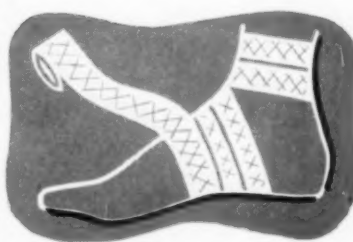
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Safety Off the Job

—From page 12

and comments on industrial and off-the-job safety in the area.

School children attending near-by schools entered a contest to make a safety inspection of their homes. Four thousand home inspections were conducted. Winners from each of the 10 schools received cash awards and were later honored before a large community group during National Fire Prevention Week, as the Junior Fire Chief of their respective schools.

Annually the plant sponsors a fire and safety rally during Fire Prevention Week, in which every group in the community is co-ordinated into the program. The company also promotes home safety ideas through their newspaper advertising and radio talks in the community.

The plant feels that their home safety program is continually improving. It is their plan, because so many of their community youth will eventually become employees of the company, to continually work on their school safety program. They plan on increasing their advertising in newspapers and radio promotion with regard to home and community safety.

Illinois Officials Using Safety Belts

ALL AUTOMOBILES operating out of his office are now equipped with safety seat belts, Illinois Secretary of State Charles F. Carpenter has announced.

The belts are made to withstand a pull of 3,600 pounds, and are easy to fasten and release. The decision to install the belts followed a careful study of a number of surveys on the benefits of these safety devices.

Studies and tests of safety seat belts have proven that they are of immeasurable value in reducing the number of injuries and in saving lives of those involved in auto accidents, Secretary Carpenter said.

People said he was one of those new hydromatic types. You know, shiftless.

Hawaii Maneuvers

—From page 100

cleared by the Safety Officer.

The Fire Direction Center then proceeded to translate the request into an order to the firing battery. Upon receipt of the order, the battery, made the necessary settings on their howitzers and fired the rounds.

The safety officers with the troops kept a constant stream of information flowing on their circuits—location of the units, their rate of advance, and width of front. With this information supplementing what they could observe, the Exercise Director, Chief Safety Officer, and the Chief Umpire knew exactly what was going on at all times.

The last two days of the week were spent in servicing the equipment, material, and going over the lessons learned.

The journey back to Schofield, at the conclusion of the test, was made at night. This operation was repeated nine times, the last battalion completing its test on October 19.

The Motor Officer was probably the hardest working man in the United States Army while these tests were underway. He was responsible for keeping the vitally needed vehicles moving. The hard, sharp lava wore out tires in two to three weeks that under normal driving conditions would last for a year or more.

Marine Corps combat aircraft used in conjunction with these tests dropped tons of napalm bombs, rockets, and 20 mm cannon ammunition. Army fixed wing aircraft of the 25th Division flew a distance of 185,000 miles over water and carried in excess of 1,000 passengers without accident. At the same time Army helicopters flew 10,000 miles safely at elevations ranging from 6,000 to 9,000 feet.

The man who really wants to do something finds a way; the man who doesn't finds an excuse.

Success or failure in business is caused more by mental attitude even than by mental capacities.—*Walter Dill Scott.*

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Keeps Out Dust

—From page 23

ment of Public Health worked with the company engineers in taking dust samples.

These dust counts ranged from 3.3 to 110.3 mppcf (million particles per cu. ft.) of .5 to 10 microns in size with median value of 16.7 mppcf. Ninety-five per cent of all dust counts were over 5 mppcf.

The company's objective was to lower median dust concentrations in the equipment cabs to less than 5 mppcf, maintain comfortable temperatures inside the cabs in both hot and cold weather, improve visibility and general working conditions for the equipment operators, and reduce hazards.

Prior to beginning the cab ventilating unit project, Johns-Manville engineers believed refrigeration would have to be included to keep the tightly closed cabs sufficiently cooled for comfort. This idea was abandoned when it was found that sufficient air movement in the cabs, combined with thermal resistant safety glass, provided operator comfort on even the warmest days. Tops, sides, bottom, and fire walls of the cabs, additionally, were insulated with a one-inch thickness of thermal insulation.

The engineering staff also had to come up with a design for a ventilating unit which would be compact enough to fit into the limited cab area on most of the equipment and at the same time withstand the severe service to

which earth moving equipment is generally subjected. Much attention was also given to designing a unit which would require a minimum of maintenance and would be readily accessible for that purpose.

After four years of trial and error experiment, the first satisfactory unit was installed and tested in 1953. The actual engineering work was performed by the Lompoc mine engineering staff and Johns-Manville's General Plant Engineering Department.

The final units, which more than fulfilled the requirements established, were developed and installed by Kilpatrick & Company, contracting engineers of Alhambra, Calif. Installation of the last of the 21 units was completed in 1955.

Components of the ventilating units finally installed are:

The blowers, used on the trucks and bulldozers, are Buffalo size C Baby Ventilation type which supply 200 cfm. Similar blowers, supplying up to 2,000 cfm., are used on large shovels. Blowers

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are driven by Pierson-Frame No. 13, $\frac{1}{8}$ hp. 1,750 rpm, 6 volt d.c. motors.

Delco-Remy heavy-duty 50 amp, 6 volt, d.c. generators, set with 200 amp. per hour batteries were installed on each piece of equipment as auxiliary power units to supply independent power to drive the ventilation fans.

Air filtering is accomplished in a two-stage process. Primary filtering is through an American Air Filter Company 12 x 24 in. surface wire type filter, Model MW-4 impregnated with BA Viscosine oil. The secondary air filtering stage is through an American Air Filter Company 12 x 24 in. surface paper filter No. PL-24 using 10 ply Type S Airmat paper. The in-cab fresh air outlet has a louvered directional control which has been found to be important to operator comfort.

The filtered air is supplied to the cabs with a slight positive pressure inside the cab (about $\frac{1}{16}$ in. water gauge) so that outside dust or air does not get into the cab through any unsealed open-

ings, although as much sealing as practical has been done.

Each ventilating unit provides from one to five complete air changes per minute in each cab, depending upon the size of the cab and the normal conditions under which the individual piece of equipment is operated.

To maintain ventilating equipment with a minimum amount of downtime, a small service shop was built adjacent to the mining areas where spare filters and other supplies are kept. Each ventilating unit is serviced in the field after eight hours of operation.

A specially designed trailer is attached to the filter service pickup truck. It is equipped with dust-tight compartments for transporting spare filters and supplies. It also has a powerful vacuum cleaner so the service man can vacuum the inside of cabs when the filter is changed.

The filter units changed in the field are brought back to the service shop where they are steam cleaned and oil dipped and filter cloths changed, ready for reuse. Field servicing of the prime loaders is done during the lunch hour so no production time is lost.

It has been found important to thoroughly clean the equipment cabs daily during the field service, particularly the floor. Operators occasionally need to get in and out of the cabs during the normal day and even reasonable diligence in cleaning shoes does not prevent a certain amount of dust being brought into the cab or coming in through the opened door.

Maintenance and upkeep of the ventilating units has averaged 1.2 man-hours per month for each piece of equipment with a total cost per month for labor and supplies of \$27.80 per piece of mining equipment.

Approximately 80 man-hours were required to completely modify equipment cabs and install ventilation units. The 21 units cost a total of \$51,682, or an average of \$2,461 each, including all experimental and development work.

Results have exceeded expectations. Air within the cabs of all mining equipment was sampled in two stages following installa-

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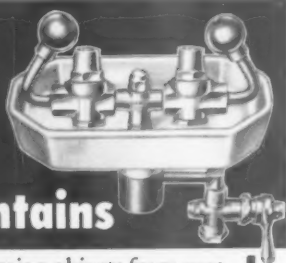
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tion of the ventilating units. The first stage of the survey was made immediately after all units had been installed, but before sufficient operating and maintenance experience had been gained to eliminate all trouble points. The second stage was conducted after minor changes had been made in units and the maintenance program was firmly established and working.

Thirty-nine counts were made in the first stage—ranging from 1.0 to 12.7 mppcf. with a median value of 3.7 mppcf. and the dust particle size range of 0.5 to 10 microns. Only 23 per cent of the counts were over 5 mppcf.

Forty counts were made in the second stage—ranging from 1.0 to 11.3 mppcf. with a median value of 3.5 mppcf. and the same particle size range that was observed during the first stage. The counts over 5 mppcf., however, amounted to only 12.5 per cent during the second stage of the survey.

Best of all results, however, is the enthusiastic reception by the operators of the ventilating units. Without exception the operators have expressed their appreciation of the clean air in their cabs and the added comfort and safety the ventilation has achieved. Driver visibility has been improved, eye injuries from dust practically eliminated and accident hazards due to reduced and impaired vision have been substantially minimized.

Johns-Manville engineers point out that such satisfactory results were achieved through the active help and cooperation of the equipment operators. The operators were not only consulted frequently throughout the design period by the engineers, but contributed many suggestions, themselves, which were incorporated in the design of the ventilating units. These operator suggestions have helped achieve more efficient operation and reduced maintenance cost.

Mining equipment on which the ventilating units have been installed include 10 bottom dump trucks, five bulldozers, two road graders, one electric shovel, one diesel shovel, one tow tractor, and one truck crane.

Sling Loads

—From page 27

we must provide for our normal safety factor being reduced more than 50 per cent during the moment of starting the lift.

If the starting stress is increased by a material rate of acceleration or by slippage of the sling on the load the total stresses set up in the sling easily increase to three or more times the load weight. This starting stress is only momentary. However, the acceleration stress is maintained as long as the rate of acceleration is continued.

The sudden stopping of a load while lowering can double the stress in the sling. In the case of modern cranes equipped with electric brakes it is probable that deceleration stresses often exceed two times load weight.

Because each type of hitch causes a different stress pattern varying materially in its effect, it is not practical to set up a safe load to provide adequate protection with all types of hitches. The safety factor must be adjusted to compensate for the particular hitch used. For example, the common choker hitch when made with a wire rope sling on a round, smooth load will normally develop additional stresses requiring a reduction from 20 to 25 per cent in the normal safe load. Because it is possible to set the grab hook in a sling chain at any location along the chain above the load it is possible to vary the resulting angle and corresponding stresses through an equally wide range.

In the case of a basket hitch with either wire rope slings or sling chains, the possible angles of each leg with the vertical or horizontal (depending on the base line used) are practically limitless and the resultant stresses vary in a somewhat similar manner. In an effort to give practical help to the rigger, most sling manufacturers give safe load for 30°-45°-60° where a vertical baseline is used and 60°-45°-30° where the horizontal is used.

In some instances riggers have interpreted the lowest safe load given as good for all angles beyond the stated angle. This fal-

lacy is strikingly shown in the accompanying diagram.

The basket hitch is subject to the same stress variation as the bridle insofar as the angular deviation from the vertical of the portion of the sling between the load and the crane hook is concerned. The stresses are in addition to those covered by the factor used in setting up the safe load.

All sling manufacturers have published schedules of safe loads for slings used in various hitches.

These schedules lower the normal safe loads sufficiently to compensate for the additional stresses resulting from the particular hitch.

When a wire rope is bent there is a displacement of the effective metallic cross section which lowers the strength of the sling when bent. The amount of loss in strength is related to the ratio of the radius of the wire rope to the radius of the bend.

Where this ratio equals 10 or

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more, the loss can be considered as covered by the safety factor used in setting up the normal safe load. However, for ratios less than 10, the strength loss becomes a material factor and adjustment must be made for the loss in strength. The accompanying table has been adopted by a large number of sling users.

Chain does lose strength when heated. Alloy sling chain will decrease in strength by approximately 44 per cent when heated to 900 F. This temperature will be reached in a chain after approximately five minutes contact with a load having a temperature of 1,900 F. If the temperature of the chain does not exceed 100 F. it should regain its original strength when cooled. It is necessary to obtain exact definition of the heat loss characteristic of the particular chain used and make adjustment for strength loss when used under conditions of heat.

With the exception of those made from certain stainless steel, normal wire rope slings are not recommended for use where temperatures exceed 600 F. Tests indicate a loss in excess of 25 per cent at this temperature. However, the evidence that loss of strength is cumulative in carbon steel ropes subjected to heat causes slings of this material to be viewed with suspicion for applications involving heat.

Your sling supplier should be in a position to furnish you with exact information on the slings furnished under specific conditions of application.

Good Housekeeping in the Laboratory

"EVERY LABORATORY is as safe as the equipment it holds, and all equipment is only as safe as the personnel make it."

This statement is just as true today as it was six years ago when it appeared in the second issue of the *Research Safety News Letter*, Standard Oil Company, Whiting Laboratories. The article, reprinted in March 1956 *News Letter*, adds several important points:

One of the basic rules for making laboratory equipment safe is to keep it free from obstructions.

Any piece of equipment can prove to be dangerous if it is difficult to reach for adjustments and manipulations. For example, a simple distillation set-up can be hazardous if the heat control on the water lines are hidden by odd beakers, flasks, and other unnecessary apparatus.

Unnecessary apparatus should not be permitted to accumulate and should be returned to the stock room if not needed in the future.

The bench should always be clean and dry. Equipment should be set up at the rear of the bench and the front of it kept as clean as possible. Cupboard drawers should be closed while work is going on so that all bench parts can be reached quickly in the event of an accident or a sudden emergency.

All of these details are important and a conscious effort to carry out these suggestions should be made so that, in time, they become a good housekeeping habit with all laboratory workers.



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Safe Ladders

—From page 25

Standard Safety Code for Portable Wood Ladders, covering requirements for materials and details of construction for all commonly used types of portable wood ladders.

There are in draft form two additional codes covering fixed ladders and portable metal ladders. Development of these latter codes has been in progress for several years, and it is expected that they will soon be approved for publication.

It is the manufacturer's responsibility to see that proper species of wood are used in proper sizes; that the wood is properly seasoned; that the natural characteristics affecting strength are limited in accordance with code requirements, and that the ladder is well made.

Wood lends itself readily to visual inspection, so that the limiting of such natural characteristics as is necessary can be readily accomplished.

Inspection of ladder material involves recognition and identification of a number of natural characteristics and defects. Some of these are very familiar and require little if any comment. Some are prohibited entirely, while others are limited in accordance with their effect on strength.

A complete list of items and features to be considered in the inspection of ladder material is as follows:

A. Characteristics Excluded in Ladders and Ladder Material

1. Decay
2. Wane
3. Honeycombing
4. Insect damage
5. Shakes
6. Compression failures

B. Characteristics Limited by Visual Inspection

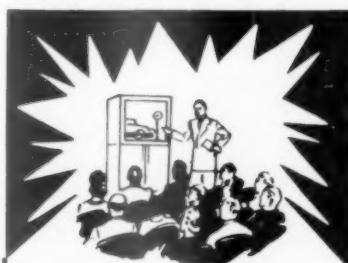
1. Density
2. Checks
3. Pitch pockets
4. Knots
5. Cross grain (slope of grain)
6. Compression wood

Visual Inspection

Wood defects are defined by the American Standard Safety Code as irregularities in wood that lower the durability, strength, and utility of ladders. The restrictions on such natural characteristics are in accord with their effects on the strength properties. Inspection of ladders and ladder material is made by visual examination, facilitated in some instances by special tools or techniques. Some characteristics, such as knots and checks, can be readily seen and evaluated in accordance with the limits on size and location specified for ladder stock.

On the other hand, such defects as compression wood, compression failures, and cross grain require more careful inspection, but their presence is indicated by certain visible characteristics of the wood when it is examined under suitable conditions.

The complete tabulation of characteristics may look formidable, but in actual practice critical inspection is required on only a few features. Routine manufacturing control meets requirements for dimensions, seasoning, and quality of workmanship; excludes material containing wane, shakes, insect damage, and decay; and



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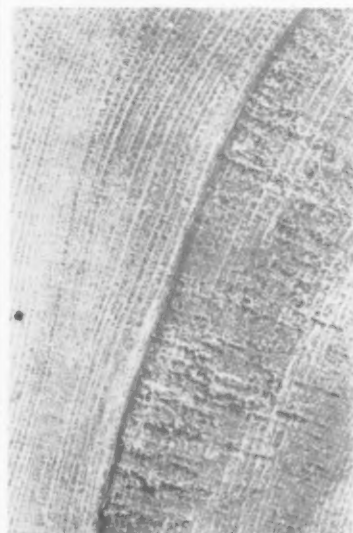
provides inspection with respect to limitation in size of permissible characteristics. Actually, the lumber grades under which ladder stock is purchased from the lumber producer limit or exclude many of these features.

Usually ladder side rails are free from knots, although a small knot at the middle of the width of a side rail has little effect on strength. In fact, a knot at the center of a rail may affect strength no more than a hole of the same diameter bored for the rung.

This leaves mainly decay, compression failures, compression wood, and cross grain as the principal characteristics requiring special inspection. Brief comment regarding each is pertinent because of their importance.

Decay is produced by plant organisms known as fungi, which live on wood substance. Advanced stages of decay can readily be recognized, but any ladder material containing either incipient or advanced decay should also be rejected. Wood kept dry will not decay.

Compression failures are injuries to the fibers resulting from excessive compression stress along the grain, so that the fiber walls are buckled. Pronounced



COMPRESSION FAILURES can often be detected by fiber breakage on end-grain surfaces of lumber. Note fiber breakage in part below black line in comparison with wood free from this characteristic above line.

compression failures are well defined and can be readily seen on the surface of a piece without magnification. Less pronounced compression failures can usually be detected by the technique of incident lighting, using a reflector spot bulb that is focused at an angle of about 20° to the surface.

Presence of compression failures of both the pronounced and the less pronounced types can usually also be detected by a characteristic fiber breakage that shows on sawn end-grain surfaces of lumber. Both decay and compression failures are prohibited defects.

Compression wood is an abnormal type of growth occurring in softwood species, principally on the under side of leaning trees. It is generally denser than normal wood and usually distinguishable by very wide annual rings, lack of contrast between springwood and summerwood, and with summerwood yellowish in color.

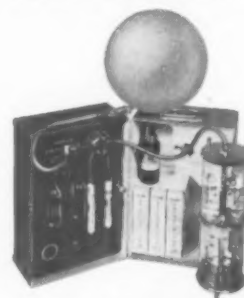
Compression wood in limited amounts does not seriously affect

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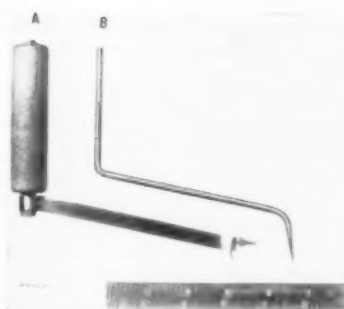
STEPHENSON CORPORATION
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strength and may be admitted with limitations in ladder stock. The following limitation on compression wood is being recommended:

"No single streak of compression wood in a ladder part shall exceed $\frac{1}{2}$ in. in width, nor shall the aggregate of streaks in the part exceed $\frac{1}{4}$ the width of a face. Bow or crook shall not be greater than $\frac{1}{16}$ in. for each 2 ft. of length."

Cross grain comprises a deviation in the direction of wood fibers from a line parallel to the sides of the piece. Severe cross grain, as indicated by steep slope of grain, seriously reduces the strength of wood. Requirements for ladder parts impose a limitation of 1 in 12 for rails and steps and 1 in 15 for rungs. Frequently cross grain can be readily detected from the appearance of the piece.

However, in many instances the determination of the degree of cross grain as a basis for acceptance of ladder stock can be facilitated by means of a simple instrument called a scribe. The inspector



SCRIBES for determining slope of grain in wood.

pulls the scribe in the grain direction along the surface of the piece. The point follows the grain, permitting a ready evaluation of the slope.

Portable Metal Ladders

Special mention of characteristics and inspection of wood ladders has been made because of their general serviceability and adaptability. Portable metal ladders of aluminum and magnesium and their alloys are now also available in a number of sizes and types. They are adaptable to a large variety of uses, but are not recommended where possible contact with electrical wiring may be a hazard. The new ASA code covering portable metal ladders will be an important factor in developing their use and in promoting safety.

Don't Test That Ladder!

It may be noted that this inspection procedure makes no provision for test loading of wood ladders. There is no simple satisfactory method of proof testing wood for strength, and any test loading much beyond the design load may result in serious damage to the side rails.

Sometimes a ladder is tested while supported horizontally on horses at the ends by having a man jump on it at the center. Such a test method should never be used, because it subjects a ladder to more severe loads than it was ever intended or designed to carry and because, even if it does not fail, it may sustain damage in the form of compression failures that can lead to sudden failures and a serious accident in future use.

So, don't test that ladder! Rath-



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er, give it a critical visual inspection to insure that it meets all requirements.

Inspection, Maintenance and Storage

Since both wood and metal ladders may be damaged in service, develop loose joints with loss of rigidity, or suffer impairment, it is important to provide periodic inspection, adequate maintenance, and proper storage.

Wood does not deteriorate with age when protected from adverse exposure and from decay. Lad-

ders that are properly used, cared for, and maintained will have long life.

Ladders should be inspected frequently to determine whether repair is needed, or whether they have become unserviceable. Assuming adequate initial inspection, there need be no further concern over the natural characteristics of the wood, such as cross grain and knots, which cannot change.

Good maintenance practice requires that the hardware and fittings be securely attached and

that movable parts operate freely. A wobbly ladder should be discarded if the loose parts and connections cannot be tightened enough to restore its original or required rigidity.

Rope on extension ladders should be replaced when necessary, and metal bearings of locks, wheels, and pulleys should be lubricated. Ladders that are known to have fallen or to have been dropped should be carefully inspected for damage before being returned to service.

Joints between steps and side rails of wood ladders should be kept tight. If a side rail is broken, either the ladder should be discarded, or a complete new side rail should be installed. Broken side rails should not be spliced.

Painting Wood Ladders

Wood ladders, except for certain specialty types, are sold in an unpainted or unfinished condition. In this condition, the ladder parts can readily be checked for cross grain, compression failures, and quality of wood. A transparent finish such as varnish, shellac, or a clear preservative is recommended.

Another recommended procedure is treatment with a water-repellent preservative, that provides both water repellency and some protection against decay. With such finishes or treatments, the ladder can be inspected from time to time as readily as if left unfinished. Some state safety codes require transparent finishes or that ladders be left unpainted for these reasons.

On the other hand, when adequate initial inspection has been made, some companies find it desirable to paint ladders and maintain them in a painted condition. Such painting is quite acceptable and permissible. It may serve to increase serviceability and reduce splintering, as well as to improve appearance. It is to be recommended, however, only after adequate initial inspection.

Storage of Ladders

Wood ladders should be stored in a well-ventilated place. They should not be stored near radiators, stoves, steam pipes, or other sources of excessive heat, or

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where they can get damp. They should be supported so that their weight is distributed to prevent sag. For example, if a long ladder is hung from two hooks near the ends, it will sag considerably at the center, and may in time become permanently deformed. Likewise, ladders carried on vehicles should be adequately supported to avoid sag and fastened to prevent damage in transport.

Safety Habits

Wood ladders meeting the minimum requirements of the American Standard Safety Code are designed to carry safely an assumed load of 200 pounds, when the load is at the center of the rungs and at the center of the length of the ladder. Also in ladder design, the strength is calculated on the assumption that the ladder (single, extension, or section) will be used with the base moved out from the wall against which the upper end rests by a distance equal to one-fourth the length of the ladder.

If the base is out further, the loading condition is more severe than that for which the ladder was designed. If the base is too near the wall, the ladder becomes less safe because it is more unstable. Material of the minimum quality and sizes acceptable for ladders affords no large factor of safety that will permit gross misuse or overloading by a factor of 3 or 4.

Thus single or extension ladders are not designed to carry loads when stretched out full length horizontally over end supports. This is the function of scaffold ladders or scaffold planks. These design conditions indicate the limitations that must be kept in mind in the use of a ladder.

Extension ladders are designed to be used with a specific minimum overlap between sections to insure proper strength. In choosing an extension ladder for a specific job, it should be remembered that the maximum working length is equal to the "size" of the ladder (the sum of the lengths of the sections) minus the overlap between sections.

The safety code is based on minimum requirements that afford safety under average conditions of

use. Where extra weight must be carried on ladders, or where there is continuous and extensive handling and hauling, it is desirable to use stronger ladders, which have rails of somewhat larger cross section than those built for ordinary use.

The design limitations also suggest caution in the use of ladder jacks and scaffold planks. The greater working space provided by the scaffold plank as compared to that of the ladder alone may invite loadings well beyond what

the ladder is designed to carry. Care must be exercised to see that the total weight of men, scaffold, and materials does not overload one or both of the supporting ladders, particularly if the majority of the load is near one end of the plank.

Select the proper type of ladder for the job.

Inspect your new ladder after purchase.

Do not test that ladder.

Place the ladder properly to reach the desired height.

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Place portable single and extension ladders at a pitch such that the horizontal distance from the top support to the foot of the ladder is one-fourth of the length of the ladder in use.

Do not use single or extension ladders in a horizontal or nearly horizontal position as a platform, runway, or scaffold.

Make sure the feet of the ladder are firmly and evenly supported. Use safety feet when necessary.

Do not place ladders on boxes or other insecure objects to gain additional height.

In setting up a step ladder, be sure the legs are fully spread and that the spreader is locked (braces set).

When working in front of a doorway, make sure that the door is guarded or locked.

For other than short ladders, secure additional help for safe handling.

Always face the ladder when

ascending or descending.

Whenever possible, use both hands in climbing.

Do not hurry when going up or down a ladder.

Do not stand on the top or next-to-the-top step of a ladder; this is an unstable position.

Be careful not to lean too far over on one side; do not over-reach; move the ladder to the work.

Do not overload the ladder.

With the exception of special types, ladders should be limited to use by one person.

Do not leave tools on the platform—they may be dislodged and create a hazard.

Do not abuse a ladder in handling by letting it fall.

Inspect ladders periodically after service use.

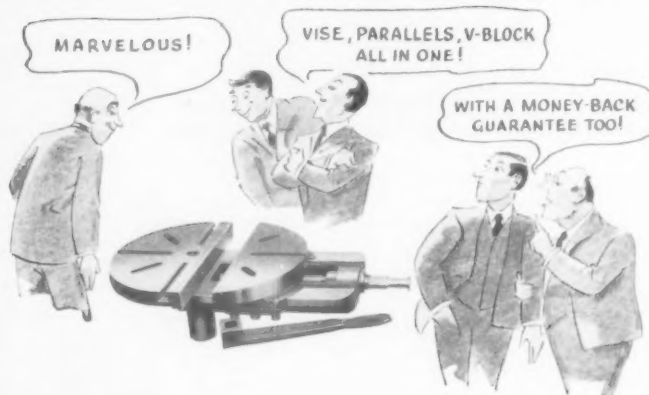
Store wood ladders in a dry location, away from excessive heat.

Support ladders in storage so they do not sag.

Examine fittings occasionally to make sure they are tight and functioning properly.

Examine the rope on extension ladders, and replace when necessary.

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Louisville—Orr Safety Equip. Co.
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Pittsburgh—Williams & Co.
Portland—Sanderson Safe. Sup. Co.
Rochester—Rochester Safe. Equip. Co.
San Francisco—B. F. McDonald Co.
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CONVOY DIVISION — KELLEY-MAHORNEY CO. 1445 S. 15th ST., LOUISVILLE 10, KY.

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Printed below are two identical Reader Service postcards—the bottom one for your use; the top one for later readers of this issue. The numbers listed on each card are keyed to product advertised and the new safety equipment and trade publications described on

pages 197 through 205. Just circle the items you want to know more about, and we will ask the manufacturer to send you full information without obligation. Both cards are perforated for easy removal, and no postage is required.

New Safety Equipment

Products featured in this section have been carefully reviewed by Council engineers so as to bring you only what's new and reliable in the safety field. Only new safety and health products, or newsworthy improvements in existing equipment are eligible for listing.

Trade Publications

Here's a wealth of helpful trade literature—catalogs, spec sheets, booklets, brochures—that will help you compare before you buy. Whether you are in the market now, or think you may be at a later date, you'll want these valuable references in your safety equipment data file.

Products Advertised

As you read through this issue of the NEWS, you will find advertisements describing equipment that may help you solve some of your accident problems. Instead of making a "mental note," make sure you get full information by circling the corresponding page number on the Reader Service postcard. The letters L, R, T and B locate the ads on the page—left, right, top and bottom. IFC—inside front cover; IBC—inside back cover; BC—back cover.

IMPORTANT—Be sure to fill in your name, organization and address in the space provided on this side of the postcard.

National Safety News, May, 1956

Please show company name in full—do not abbreviate.

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169L 169R 170T 170B 171T 171B 172 173 174T 174B 175T 175B
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127 128 129 132 133 134 135 136 137 138 139 140
141 142 143 144 145 146 147 148 149 150 151 152
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162T 162B 163T 163B 164 165 166T 166B 167T 167B 168L 168R
169L 169R 170T 170B 171T 171B 172 173 174T 174B 175T 175B
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The advertising pages of the News

... your guide to reliable suppliers of worthwhile safety equipment

The advertising policy of the NEWS requires that all equipment and products meet established codes and standards, have the approval of recognized testing agencies, or have proven their value through actual use in industry. Council engineers and technicians screen every

advertisement to make sure that product description is accurate, and performance claims verified by reliable sources. It should not be construed, however, that products advertised are approved or endorsed by the National Safety Council.

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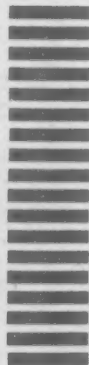
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Make sure all the items you want to know more about are circled ... check to make sure your name, organization, and address are printed on the reverse side of the postcard ... THEN mail it today.

National Safety News, May, 1936

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Roundhouse

—From page 31

trogen dioxide approached two parts per million, the investigators noted that the subjective reactions to themselves and to the employees were those of irritation of the eyes and upper respiratory passages. Sometime during the past tests were made in a garage where diesel busses were being operated. When the average concentration of nitrogen dioxide was found to be about 2.5 parts per million, the irritation from the diesel exhaust gases was greatly intensified.

Conclusions from the tests were brought to the attention of the company officials, who stated that funds had been allotted for installation of a ventilating system in the area of greatest activity. However, realizing that the modernization program would result in the servicing and repair of diesel locomotives in all parts of the roundhouse, additional funds were requested for ventilating and heating the entire roundhouse.

Due to the amount of money involved (approximately \$300,000), it was decided to ventilate each of the four sections separately, starting with those sections of the roundhouse where there was greatest activity. The project was handled by D. M. Burkett, electrical engineer. Plans were prepared by Hubbard, Tracey & Blakely, consulting engineers, Boston. These plans were critically reviewed, and then approved by the engineers of the State Division of Occupational Hygiene.

Plans call for exhaust ventila-

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INDUSTRIAL GLOVES



AMERICA'S MOST POPULAR HAND SAFETY GLOVES

- **Permanent NON-SLIP** on all 5 fingers and palm. Highly efficient embossed surface is integral part of glove.
- **Curved FINGERS** for comfort and easy use.
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tion of gases, smoke and fumes, and provision of an adequate supply of heated fresh air to the various sections. Each section is provided with four hoods, each being at right angles to and above three sets of tracks. Each hood is located 25 ft. above the floor, and is provided with an individual exhaustor capable of removing 15,000 cu. ft. of contaminated air per minute.

Diesel engine discharge ducts are located directly under the hoods where practicable. It is not contemplated to use all four of the exhaustors at the same time unless needed. The original smoke jacks remain in place since they are suitable for removal of steam from the generators used for heating passenger cars.

Pre-heated, make-up air is supplied to each section. There are three heater-ventilator units per section, each capable of supplying 15,200 cu. ft. per minute. Warmed fresh air is brought into each section through metal ducts, located along the building's steel columns, with the grille openings at three feet above the floor. The temperature of the air is thermostatically controlled.

The Boston & Maine is doing its own installation and fabrication work. A sheet metal shop, using 12 employees, fabricates the rectangular sheet metal duct work, and installs it in the desired locations. As each section is completed, the men and the sheet metal working machines are moved to the next section.

Each section has three heating and ventilating units, four roof exhaustors, and 12 unit heaters. The unit heaters create a curtain of warm air when the doors are open to permit the entrance or exit of the diesel locomotives. To further reduce exhaust gases in the working atmosphere, the maintenance crew has been instructed to operate the diesel within the roundhouse only when necessary.

\$267 Million Lost in 'Big' Fires Last Year

A RECORD NUMBER of "large loss" fires last year in North America cost a near-record dollar loss total.

These are fires causing individual losses of \$250,000 or more and there were 316 in the United States and Canada in 1955.

This was reported by the National Fire Protection Association in its annual "large loss" fire study. The study will appear in the Association's current quarterly magazine.

The report states that there were three more big fires last year than the previous "worst" year total of 313 in 1954.

And last year's large loss fires destroyed a total of \$267,704,500 worth of property. This was exceeded only by the \$274,374,500 direct loss of 1953, the year in which one industrial fire involved a \$45 million loss.

The 316 big fires, according to the NFPA study, accounted for about 24.5 per cent of last year's total dollar fire loss in the United States and Canada (estimated by the NFPA to be \$1,098,000,000 and caused by approximately 2 million fires of all kinds).

These fires resulted in 296



Don't let hot weather "KO" your workers... be sure you have plenty of MSCO IMPREGNATED SALT TABLETS readily at hand. Controlled action of these MSCO impregnated salt tablets replaces body salt immediately, but at a gradual rate to meet the body's needs. In expendable dispensers for wall locations, or in handy plastic vials for field workers. See your MSCO distributor, or write for literature and prices.



Specialists in first aid

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deaths, as compared with 409 deaths in 1954.

There were 61 fires with losses of \$1 million or more; only 44 in 1954.

The number of transportation fires increased to 70 from 57 in 1954; and manufacturing fires increased by three over the 1954 total of 75.

There were a fewer number of big fires in these classifications: storage—41 compared to 54 in 1954; mercantile—50, a drop of 4; and residential—9, down from 11.

Excluding transportation fires, 224 of the large loss fires occurred in the United States, 22 in Canada. States with the largest numbers were Pennsylvania with 27, California 20, New York 15, New Jersey 12, Michigan 11, Illinois and Massachusetts 10 each.

Of the 316 large loss fires, 225 were building fires and the NFPA study indicated that structural fire protection weaknesses played a significant part in the extent of damage in 200 cases.

Major below-standard construc-

tion features contributing to fire spread in the 200 buildings were: absence of fire division walls or substandard division walls, 147 instances; doors unprotected or blocked open (22); open stairwells (67); open elevator shafts (43); nonfirestopped walls (21); combustible fibreboard, interior finish or insulation (21).

Fifty-eight building fires spread to nearby buildings because of these structural hazards; lack of intervening fire walls, outside sprinkler protection, or adequate building separation (31); poorly constructed party walls (14); interconnecting passageways (13); ordinary glass windows (9); and trash between buildings (3).

The NFPA's findings cited delayed fire detection and alarm as responsible factors in 163 of 1955's big fires. In 119 delayed discovery fires, the buildings had been closed for the night or weekend and had no watchman or automatic fire protection. An additional 30 resulted from substandard watchman protection.

In 77 instances, fire was immediately discovered but the alarm was delayed, chiefly by occupants (33 instances) who thought they could put out the fire without professional help and called the fire department only after the fire had gotten out of control.

Causes of most large loss building fires could not be determined because evidence was destroyed. However, of the 65 known or probable causes, careless cutting and welding practices accounted for 7, wiring faults 7, trash 6, incendiary or suspicious fires 5, incinerator sparks 3, defective motors 3, and careless smoking, children with matches, and ceiling furnaces 2. A scattering of unrelated causes was responsible for the balance.

The reporter was interviewing the man who was 104 years old.

"And to what do you credit your longevity?" he inquired.

"I don't rightly know—yet," the old timer replied, staring thoughtfully into space, "but I'm dickerin' with two medicine companies right now."

LOCK OUT DANGER



to workers in your plant with "Lock-Out" safety device for use on switches, fuse boxes, and similar controls. Stops all possibility of starting equipment when maintenance or repair men are working on it.

Holes permit six different men to put locks on a switch. Machine cannot be operated until last workman removes his lock.

"Lock-Out" devices are coated with heavy vinyl plastic for top insulating qualities. Size 4 1/4" x 1 1/2".

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- Eliminate traffic accidents at blind corners inside and outside your plant—also at loading platforms.
- Traffic Safety Mirrors are available in convex or flat glass.
- Mirrors are easily installed and adjustable.

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World's Oldest and Largest Manufacturer
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Power Press Guards

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Wiesman cam-action press guards enable operators to work at top speed without fear of accident. Guarding is effective and completely automatic . . . does not hamper operator's vision or movement. For all sizes and styles of presses. Used by hundreds of firms. Inexpensive . . . easy to install.

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Accident Post-Mortems

—From page 6

half. If clips were used, were they installed properly?

The safe load for a 1½-inch manila line is rated at 3,700 lbs. The safe load for a ¾-in. single cable sling is 1.3 tons. We are assuming that the load did not exceed the 3,700-lb. capacity of the manila rope. Therefore, the installation of the cable sling must have been faulty.

(A complete description of the use of cable sling is given in Section 22 of the *Accident Prevention Manual for Industrial Operations*, Third Edition, 1955.)

The figures given above, along with our assumption, show that the load on the cable sling was not in excess of its rated capacity (since the cable was wrapped around twice). We must, therefore, assume that the sling itself was defective.

Faulty Basic Design of Equipment

This airport runway accident points up faulty basic design of equipment. A mechanic was struck and seriously injured by a belt loader conveyor while walking from one plane to another on a passenger terminal ramp. The conveyor was being driven from the fence line to a plane on a ramp loading spot.

The conveyor operator stated that he did not see the mechanic. Apparently the boom in a horizontal position obstructed the operator's vision. The forward end of the conveyor boom struck the mechanic, knocking him down.

The unit passed over him, causing a head wound of considerable depth and several inches long, fractured the mechanic's skull and nearly stripped the coveralls from his body, causing bodily bruises and abrasions. After striking the mechanic, the conveyor moved about 12 ft. before stopping.

Witnesses stated that they thought the conveyor was properly operated, that it was moving at a speed of approximately five miles an hour and that the accident was probably due to these two factors:

1. The mechanic was not looking in the direction in which he was walking.

2. The blind spot created on the conveyor unit by the boom restricted the vision of the operator, and he was unable to see the mechanic, who was directly in line with the blind spot of the vehicle.

The company, to correct the blind spot created by the conveyor boom position, planned to install a stop on the high lift of the boom which would make the down position approximately 12 in. higher than the down position at the time of the accident.

This improvement does not provide complete forward vision, but it does improve the vision and if the operator is driving with caution and leaning forward, he has a complete field vision.

The company also recommends that a traffic line be painted on the outer ramp as a guide for all motorized equipment. This line would keep all motorized equipment away from aircraft when moving the mobile equipment

SPECIFY Johnson Ladder Shoes for Safe Climbing



ALL RUBBER
ANKLE ACTION
Always Flat at Any Angle

Standard Equipment in
Thousands of Plants everywhere

**JOHNSON
LADDER SHOE CO.**

EAU CLAIRE, WIS.

from one gate to another or when moving along the ramp.

The guide line would have a tendency to alert personnel on foot to the fact that they are walking in a motorized equipment traffic lane.

As a result of this accident, the company investigated the operating procedures for this type of equipment for other carriers at the airport and found that no standard operating procedure existed. Some carriers operate the unit to and from the aircraft with the boom in the up position; others operate with the boom in the down position.

The carrier feels that some compromise between vision and the ground and the height of the boom which could strike aircraft must be made until a permanent acceptable modification can be arrived at.

The company reports that this accident occurred with a "jeep" type conveyor but that the other type conveyors seem to be satis-

factory with regard to this restricted vision problem.

Comment: It is evident that the driver of motorized equipment must have a clear view all around his equipment in an area where there is pedestrian traffic by workers and the public. Possibly the location of the driver's seat could be changed, or the equipment completely redesigned.

Nurses to Discuss 'Atom in Industry'

THE THIRD ANNUAL workshop in industrial nursing will be held May 25-26 at the University of Oklahoma Medical Center in Oklahoma City. Theme of the workshop will be "Contemporary Developments in Occupational Health."

Subjects to be covered include: "The Atom in Industry," "Front-line Psychiatry on the Job," "Nursing in Disasters," and "The Cardiac and Workmen's Compensation."

Among the speakers are Dr. Harry Levinson, director of the Department of Industrial Mental Health, Menninger Foundation, Topeka, Kan.; Dr. Donald J. Birmingham, chief dermatologist at Occupational Health Field Headquarters, U. S. Public Health Service, Cincinnati, Ohio; Miss Katharine A. Lembright, assistant executive secretary, American Nurses Association, New York, and Maj. Margaret A. Richey, chief nurse of the U. S. Air Force Hospital, Bergstrom Air Force Base (Strategic Air Command), Austin, Texas.

The workshop is being sponsored jointly by the University of Oklahoma School of Medicine through its Office of Postgraduate Instruction, the Industrial Nurses Section of the Oklahoma State Nurses Association, and several sponsors from industry.

Advance registrations can be made with the Office of Postgraduate Instruction, University of Oklahoma Medical Center, 801 N. E. 13th Street, Oklahoma City 4, Okla.

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SAFETY DEVICE FOR LADDERS

Prevents death and injuries from falling.

Automatic: Positive. Will catch workman if he starts to fall even if unconscious.
Inexpensive. Easy to install. No upkeep. Clamps to any rung ladders, peg ladders, pole or frame. No welding or cutting.
Simple to operate: Requires no attention from climber.
Notched rail hot dipped galvanized. Entire equipment rust and corrosion proof. In use throughout country and abroad for approx. 8 years.

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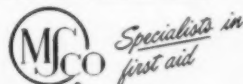
National Safety News, May, 1956

BURN! PAIN... SHOCK... SPRAY IT!

... the best and safest method for the "first aider" because he doesn't touch the patient!

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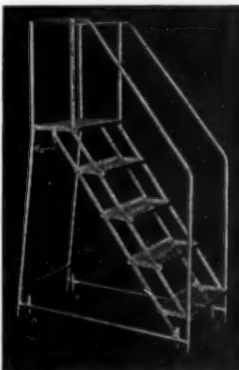
Doctors agree that certain basic conditions are present in all burn cases. The "first aider" is qualified only to deal with the first three: Relieve Pain, Prevent Infection, Treat Shock. Spraying burns does this best. And the MSCO assortment of Burn Spray Kits is the largest ever offered. Americaine or Kip Antiseptic Oil in either compact Unit-Type Packets with Pressure Cartridge Spray or Complete Burn Spray Kits; Aerosol Dispensers of Foille, Americaine, and Kip; Foille and Hydrosulphosol Burn Spray Kits; Fire Department Kits. MSCO also supplies all standard burn ointments in unit form for first aid kits. See your MSCO distributor or write for details.



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SAFE
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STRONG
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EASY TO MOVE
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EASY TO CLIMB
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NON-SKID STEPS

Frame work made from heavy gauge 1" diameter round steel furniture tubing, with all joints electrically welded. Mounted on Swivel Brake Casters which allow the ladder to be rolled freely when no one is on it. When you step on the ladder the rubber cushioned legs rest on the floor and prevent rolling.
Made in 13 heights—from 12" 1 Step to 117" 13 Step, and in 4 widths—18", 20", 26" and 32", with and without hand and platform rails.

We also manufacture the COTTERMAN TRUCK - N - LADDER

A Truck and Ladder combined in a single unit.

Write for Folder No. 56-N for complete information and prices on both these items.

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No more drudgery for me in cleaning grease-caked floors



His boss is happy too . . .

A flip of the switch
re-sharpens brushes
automatically!

and should be. Now an Industrial Dry-Scrubber, Finnell's 84XR at left, does the job in about one-tenth the man-hour time required to hand-scrape the floors! And of course the machine is far more thorough, and spares maintenance men the back-breaking effort of manual methods. Equipped with two powerful scari-fying brushes, the 84XR digs through and quickly loosens even the most stubborn coatings of dirt, oil, grease, and shavings. Universal couplings enable the brushes to clean recessed areas that rigid coupling brushes would pass over and miss.

Reversible motor keeps wires sharp. A flip of the switch reverses the rotation of the brushes and re-sharpens them automatically . . . while working! Eliminates the need for frequent changing of brushes by hand in order to maintain a sharp cutting edge. Reversal of brush rotation also helps keep the brushes functioning efficiently by ejecting sticky substances that would otherwise clog and slow up the cleaning process. Total brush spread of the 84XR is 22 inches. Low, compact design permits cleaning right up to and beneath machinery — areas where deposits are heaviest. Interchangeable rings and brushes adapt the machine to wet-scrubbing, polishing, and steel-wooling.

Clean floors allow industrial trucks to move swiftly, surely and, according to actual tests, with half the pull it takes to move loads over dirty floors. In addition, clean floors aid safety underfoot and contribute to worker productivity. So it pays to keep floors clean — especially with a labor-saving 84XR! (The Vacuum Cleaner at extreme left, Finnell's 10B for wet and dry pick-up, features a By-Pass Motor.)

For demonstration, consultation, or literature, phone or write nearest Finnell Branch or Finnell System, Inc., 2205 East St., Elkhart, Ind. Branch Offices in all principal cities of the United States and Canada.

Brushes adjust
to floor
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Originators of Power Scrubbing and Polishing Machines



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Welder's Glove

Oil Absorbent Dispenser Cart

A new multi-purpose cart has been introduced for spreading, storing, and disposing of oil and grease absorbents. The Hi-Dri 3-in-1 Spreader is said to reduce waste of absorbents and speed up the application rate. An adjustment lever allows finger-tip control of material flow. The cart can be used to store more than 50 lbs. of absorbent.

The body is made of heavy gauge steel with reinforced edges and welded seams. An extra heavy gauge spreader cover provides a strong flat bottom for heavy loads when the

mounting bracket on the cap permits the goggle, once adjusted to the individual's need, to be raised to the inoperative position, and then to be lowered again without readjustment.



The bracket also permits the goggles to be worn slightly off the face, an adjustment used by many who do gas welding, cutting, or spotting. The "Supergard" cap has a full floating, plastic headgear.

The Bayer-Campbell Co., 6540 St. Antoine St., Detroit 2, Mich. (Item 2)

Watchclock

The Chicago Comet, this organization's newest, low price watchclock, has a new dial-marking mechanism and its own day-dial design and station-box keys.

The Comet has the approval of Underwriters' Laboratories and Fac-



tory Mutual Laboratories. It is tamperproof, and the entire system can be easily installed in a short time with a screw driver.

Chicago Watchclock Co., 1526 S. Wabash Ave., Chicago 5. (Item 3)



unit is used as a cart. It also forms a gravity-feed hopper when the cart is used as a spreader.

The cart has wide semi-pneumatic tires, a handle made of heavy gauge tubing and sturdy steel legs.

Waverly Petroleum Products Co., 1724 Chestnut St., Philadelphia 3. (Item 1)

Safety Cap and Goggles

The "Supergard" safety cap and cover glass welding or chipping goggles is a combination for those requiring both eye and head protection. The goggles, cover glass style, can also be comfortably worn over personal glasses. These goggles, adjustable for pupillary distance, has individual cup action for fitting. The

A new, patented welder's glove features a completely seam-free construction at the points of greatest wear and abrasion—the work grasping area. The construction has eliminated the seams along the top edge of the index finger, the top edge of the thumb, and at the junction of the above seams.

The glove presents a solid wall of leather at the index finger, thumb crotch, and thumb.

The company claims that there can be no seam breakage due to heat-weakened or burned thread.



The elimination of seams at the thumb area is said to result in greater comfort, and allows the worker to grasp his work more firmly and safely.

The glove is available in all of the leathers tanned for welder's gloves.

Shakespeare Glove Co., 166 W. Jackson Blvd., Chicago 4. (Item 4)

Slip-retardant Floor Paint

A slip-retardant floor and deck paint has been tested on tug and barge walkways, tanker decks, oil loading platforms, refrigerator car floors, and refinery catwalks.

The slip-retardant agent is incorporated in enamel and is non-metallic and sparkproof. The anti-slip paint is said to be effective where oil, grease, and water cause slippery surfaces.

The paint contains a relatively soft anti-slip agent and can be applied with a spray or brush.

E. I. DuPont de Nemours & Co., Wilmington, Del. (Item 5)

Insulated Liquid Carriers

An "In Compliance" line of six sizes of AerVoid portable vacuum insulated hot coffee and liquid carriers and "NC" and "NS" faucets have been submitted to the United States Public Health Service, the highest U. S. Government authority on sanitation. The line is "In Compliance" with the sanitary construction requirements (Item 9, Bul. 280) recommended by it.



The company says that this equipment is in line with the trend of tighter sanitary regulations by Health Authorities on equipment used in mass feeding operations.

Vacuum Can Co., 19 S. Hoyne Ave., Chicago 12. (Item 6)

Safety Hat

A lightweight aluminum safety hat is equipped with a universal adjustable cradle.

The light metal and its insulating properties make the hat comfortable in hot weather. The ribbed alloyed aluminum construction is said to provide maximum strength and toughness. It is claimed the hat resists impact in excess of 40 ft.-lbs., and will not crack or break when dropped. Six-point, snap-in shock absorber suspension distributes and minimizes the shock.

Davis Safety Div., Davis Emergency Equipment Co., 47 Halleck St., Newark, N. J. (Item 7)

Automatic Fire Alarm

The Unit-Guard is a new fire alarm. At 136 degrees it blasts a piercing, shrill, five-minute warning—penetrating a circumference area of 1/10 mile.



According to the manufacturer, one Unit-Guard covers an area of 225 square feet.

The unit hangs on the wall and has no wires, batteries, or springs. Unit Chemical Corp., 4161 Redwood Ave., Los Angeles 66. (Item 8)

Combustible Gas Indicators

Four models, each intended for

specific functions, are included in this new line of combustible gas indicators. All models and sizes use standard detector and compensator filament units.

A unit weighs six pounds, and the operating power is supplied by eight dry-cell flashlight batteries.

Samples of atmosphere are drawn into the instrument by squeezing an aspirator bulb. The atmosphere is tested for combustibility by a balanced Wheatstone bridge circuit. The batteries provide 10 to 11 hours of continuous service.

Specially designed flame arrestors on both sides of the sample flow system permit use of the instrument in testing flammable gases and vapors.

The indicating meter is flush-mounted in the top panel.



Model 20 is designed for multiple calibration. A selector switch on the instrument panel has five different settings for varying gases or vapors.

Model 21 is identical to Model 20 except that it has a dual scale controlled by a selector switch. One scale provides reading from 0 to 100% of the lower explosive limits. The other provides reading in the range from 0 to 25% of the lower explosive limits.

Developed primarily for utility companies and municipalities to test manholes, sewers and other underground areas, Model 30 can differentiate between natural gas and petroleum vapors.

Model 40 is designed specifically for industrial hygiene work and has a dual scale meter. One is graduated for 0 to 100% of the lower explosive limits and the other for 0 to 10%.

Mine Safety Appliances Co., 201 N. Braddock Ave., Pittsburgh 8, Pa. (Item 9)

Bird Control Compound

This odorless, non-inflammable and non-toxic gelatin compound is designed to control pigeon and starling nuisances.

"Roost-No-More" can be adapted by industries and utility companies for use where a problem of birds collecting or building nests on ener-

gized electrical equipment may cause electrical shorts, service interruption, and possible fire hazards.



The product is dispensed from a caulking gun or aerosol containers and will aid in reducing hazardous working conditions resulting from birds.

National Bird Control Laboratories, 5315 Touhy Ave., Skokie, Ill. (Item 10)

Abrasive Resurfacing Material

An abrasive resurfacing material, called "Duracite," is designed to reduce slipping and tripping hazards on worn stairways and uneven floors.

The material comes in powdered form, and is made into mortar by adding water.

The abrasive forms a solid bond with slate, wood, marble, concrete and will set-up to support foot traffic in six to eight hours.

Duracite is available in six colors and is said to be slip-resistant whether wet or dry.

Robert N. Kimball & Sons, 543 Prospect St., Maplewood, N. J. (Item 11)

Spanner Wrench Holder

These aluminum spanner wrench holders can be mounted at strategic points. Spanner wrenches are held in place and can be removed with one hand for instant use. Spring-loaded latches hold the wrenches securely, yet allow replacement with one hand.

Each holder is complete with two spanner wrenches. The wrenches are made of tough, light weight malleable iron, cadmium plated, and are used for pin lugs, rocker lugs, and all rocker type hose couplings.

They are designed to serve also as a pry bar, hammer, window jimmy, and gas cock shut-off.

Akron Brass Mfg. Co., Inc., Wooster, Ohio. (Item 12)



Slip-resistant Floor Polish

This floor polish has been formulated for high slip resistance. Super Hilco Lustre does not form a soft, tacky film that tends to produce a gummy, dirt catching surface.



The manufacturer claims that the polish offers high-slip resistance without sacrificing the hard wearing qualities of carnauba products. The luster finish is water resistant, and easy to maintain. Patching traffic lanes and buffing-in to match is possible with the polish.

Hillyard Chemical Co., 402 N. Third St., St. Joseph 1, Mo. (Item 13)

Stainless Steel Extinguisher

This pressurized, clear water extinguisher is approximately 4 lbs. lighter than a 2½ gallon brass model. A slight pressure on the release lever expels a controllable 45 ft stream of water.

The lightweight and maneuverable



extinguisher is especially suitable for fire hose and extinguisher cabinets in schools, institutions, hospitals, industries or wherever women might need to use an extinguisher. Repressurizing is simplified and no special tools are necessary.

The extinguisher has the UL A-1 rating and is recommended for wood, paper, trash, rubbish, or where any ordinary combustibles present a fire hazard.

The extinguisher is pressure-tested to 500 psi.

Buffalo Fire Appliance Corp., 221 Crane St., Dayton, Ohio. (Item 14)

Carbon Monoxide Detector

Carbon monoxide in any concentration dangerous for occasional, short-time, or long exposure, is in-

dicated by this pencil size carbon monoxide detector. The instrument is useful as a "safety check" on carbon monoxide hazards in garages, mines, vehicular tunnels and furnace rooms.

It is fast and simple in operation, and shows the presence of carbon monoxide concentrations as low as 40 parts CO per million parts of air.

It requires no color matching or reference to a comparator scale.



The "Monoxor" indicating tube is a glass tube containing a yellow carbon monoxide sensitive chemical which turns brownish-gray when carbon monoxide passes through the tube.

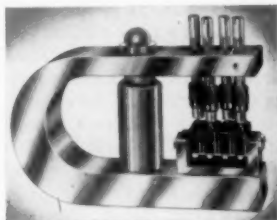
Bacharach Industrial Instrument Co., 7301 Penn Ave., Pittsburgh 8, Pa. (Item 15)

Multi-Switch Force Gauge

This force gauge for controlling mechanical forces at various load points is available in 11 capacities and with one to four control switches.

The basic design centers around an alloy steel pressure beam made in the shape of a "U." This is heat treated and designed to flex millions of cycles without losing its resiliency.

Switches are set in a yoke which is mounted to the lower leg of the beam. When the load is applied across the center of the beam, it deflects inwardly causing the finely threaded adjustments screws in the upper half of the bar to contact the switches. The adjustment screws can be permanently set and sealed at the factory, or an adjustable model may be specified.



The gauges can be clamped or bolted to working surfaces. A solid steel rod is inserted between the beams so that once full capacity has been reached, the upper half of the

beam bottoms against this rod. Further accidental overload then passes through the rod instead of the instrument and cannot injure it or the switches.

The force gauges are available in varying capacities from zero up to 50,000 pounds.

W. C. Dillon & Co., Inc., P. O. Box 3008, 14620 Keswick St., Van Nuys, Calif. (Item 16)

Safety Drum Faucet

This safety drum faucet is specifically designed for safe control of flammable liquids. The new type teflon-asbestos packing composition prevents leakage at the swivel connection.

A spring-mounted handle permits dispensing only when an attendant is present. Flow of liquids stops completely when the handle pressure is removed.

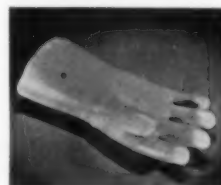
A cylindrical, perforated brass flame arrestor, which also serves as a strainer, is located within the faucet at the dispensing opening where it may be removed easily for cleaning. The flame arrestor is claimed to prevent exterior fire from entering and igniting the contents of the container. The body of the faucet is non-sparking brass and the large lever type push handle is a cadmium plated steel stamping.

The Protectoseal Co., 1920 S. Western Ave., Chicago 8. (Item 17)



Coated Work Glove

These work gloves are for use with high-powered solvents such as ketones, acetones, and petroleum base decreasing solvents.



The coating compound is claimed to be highly durable in the presence of such chemicals.

It is said to increase glove life, but the manufacturer warns that they are specifically not for use in steam, water, or alkali decreasing products.

The gloves feature curved fingers and wing-thumb construction, and are available in various sizes for both men and women.

Surety Rubber Co., Carrollton, Ohio. (Item 18)

Warning Light

These warning lights are designed for telephone company and public utility use.

Model A-100 is a flashing light operated by a dry cell battery to be used in front of man-holes when workmen are underground. The model is equipped with a 7-in. directional head which is light weight and can be elevated up to 10 ft. Besides the directional head, an alternate head with 360° lens is also available.

The model will flash continuously for 750 hours on two ignition batteries. It is weatherproof, and the neon tube will not burn out.

Neo-Flasher Mfg. Co., Inc., 3210 Valhalla Drive, Burbank, Calif. (Item 19)



Compact Sweeper

This vacuum-equipped sweeper is a 28-in. rider-type for areas in factories, garages, warehouses, etc. where larger sweepers cannot be used.

Model 50 is 60 in. long and cleans a 28-in. path. It features a combined brush-plus-vacuum system utilizing high volume air flow. A 28 in. main brush revolving in a vacuum-equipped compartment, hurls dirt and litter into a removable dirt hopper. At the same time, a high-volume 11-in. fan draws dust and fine dirt from the brush compartment up into a fabric bag.



The new sweeper reportedly drives like a car. A two-tone, high visibility finish is used and the machine is powered by a 6.8 hp. air-cooled engine. It has two forward speeds and one reverse, a 4½-cu. ft. dirt hopper, and convenient dirt controls for main brush and the optional side brush.

G. H. Tenant Co., 2550 N. Second St., Minneapolis 11, Minn. (Item 20)

Safety Flashlight Kit

A safety kit that consists of a solid brass flashlight and two leak-

proof batteries is sealed in a polyethylene package.

The kit is designed to assure light in an emergency as the polyethylene keeps the batteries fresh for long periods of time.

Olin Mathieson Chemical Corp., 460 Park Ave., New York 22. (Item 21)

Plastic Headgear

The "R" headgear for welding helmets is made from tough plastic to stand up under extreme temperature conditions.

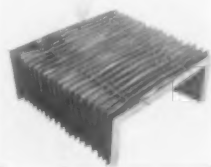
It features a closed plastic sleeve which encloses the gear teeth in the ratchet part of the assembly so they are not exposed. The sleeve prevents gear grease or dirt from getting into the operating mechanism. A plastic band can be bent, creased or flexed without breaking.

The Sellstrom Mfg. Co., 222 Hicks Rd., Palatine, Ill. (Item 22)

Top-Running Way-Protector

Application of this pliable protection for machine tools includes grinders, millers, and boring machines.

The way-protectors are assembled to permit application on present machines already in service as well as on varying types of new machines



on OEM assembly lines. Each convolution has its own metal supporting bridge. Brass reinforcing grommets, fabricated integrally with the convolutions, maintain the freedom of travel back and forth on the top-supporting guide rods. No wear takes place directly on the convolutions at either top or bottom. Bottoms of the protectors extend over the bed edge to prevent entry of dust beneath the way-protector.

Top-running, equalizer-spacer strips evenly distribute the pull on all convolutions. End mounting plates for attachment to bed or tool-frame are cut from aluminum plate.

A & A Mfg. Co., Inc., 2017 W. Clybourn St., Milwaukee 3. (Item 23)

Thermosetting Plastic

Homalite 101 is a clear thermosetting plastic that does not support combustion and has high heat resistance. It chars when direct flame

is applied, but will not continue to burn when the flame is removed.

The plastic is clear and almost colorless and is resistant to scratching and crazing. It is reportedly a better thermo insulator than glass, and insoluble in solvents. It can be



sawed, drilled, bored and machined much like metal. It comes in standard size sheets and can be specially ordered in large sizes and cast shapes and colors.

The Homalite Corp., 11-13 Brookside Drive, Wilmington 4, Del. (Item 24)

Fluorescent Lamp

A new fluorescent lamp features lightweight steel construction, flexibility, and finger-tip maneuverability.

A variety of brackets allow the lamp to be clamped or mounted to flat surfaces or walls or to be permanently or temporarily installed on desks, drawing boards and walls.

The lamps are available in several colors.

Luxe Lamp Corp. Tuckahoe, N. Y. (Item 25)

Aluminum Alloy Ladder

The light Home Master stepladder is constructed of heat-treated structural aluminum alloy. Designed for use in the office, library, or stock room, it features double-riveted

steps, cadmium-plated steel spreaders, reinforced diagonal bracers, and has many safety features. The steps are ridged for better footing, and the rubber feet hold to the floor. There are non-skid rings on the pail shelf and tray-type top.

The ladder is available in 2 to 6 ft. sizes. The 2-ft. size features a ribbed rubber top, and the 4- to 6-foot sizes are equipped with a pail shelf.

Louisville Ladder Co., 1101 W. Oak St., Louisville 10, Ky. (Item 26)



Aluminum Chain Block and Trolleys

These aluminum chain blocks and trolleys are available in 1/4, 1/2, 1, and 2 ton capacities.

The chain blocks are suitable for use in hazardous atmospheres or places where safety and resistance to corrosion are important. The safety-type load hooks are made from a durable, high-strength bronze alloy; the load hooks sleeves are of a phosphor bronze alloy; the load chains consist of a chrome nickel stainless steel alloy and the hand chains are made from a bronze alloy. These features tend to eliminate sparking and the generation of static electricity during the raising and lowering of the load and add additional safety to working areas requiring spark or corrosion resistant equipment.

Sparking and static electricity is reduced in traveling through the use of lubricated, ball-bearing, beryllium copper trolley wheels that have heat-treated treads and deep side flanges to prevent wheels from climbing the track.

Manning, Maxwell & Moore, Inc., Muskegon, Mich. (Item 27)

Vinyl Coated Work Gloves

Gloves for workers handling gasoline and oil products have a special coating based on bakelite vinyl resins to resist oils, gasoline, acids and other chemicals.



The durable and flexible coating is fused to a strong, comfortable fabric liner for snag and tear resistance. According to the manufacturer, these work gloves stay flexible after a 24-hour bath in such solvents as gasoline, kerosene, naphtha, mineral spirits and petroleum oils. Six work

glove styles are available including full or palm coating, mittens, knit-wrist, band-top, and gauntlet style gloves with long or short safety cuffs.

Bakelite Co., Div. Union Carbide & Carbon Corp., 260 Madison Ave., New York 16. (Item 28)

Fork Lift Attachments

Two safety accessories are now available for fork lift trucks. One is an overhead guard attachment designed to shield the driver from materials that may fall from loads being transported or high stacked.

The other accessory is the Carton Clamp. This hydraulically operated device safely handles multi-unit loads of cartons, cases, and packages, crates and similar objects.



The Carton Clamp, which is said to eliminate the need for pallets, has arms whose faces are rubber covered for added protection to the load. The clamp is easily attached and removed.

Towmotor Corp., 1226 East 152nd St., Cleveland 10, Ohio. (Item 29)

Construction Warning Light

The "Big Flash" is a flashing mechanism, capable of 2,100 hours of continuous operation on one dry-cell battery.

The unit is self-contained, and operates on standard batteries. The light is weather-, dust- and explosion-proof and the large square, red or amber butarate lens has 360° visibility and offers approximately 85 sq. in. of light surface. The device is equipped with an on and off switch controllable only by the owner and foolproof to vandals.

Pioneer Signal Light Co., 11300 Hindry Ave., Los Angeles, Calif. (Item 30)

Elevated Working Platform

The "Hi-Deck," a portable, all-hydraulic, elevating work platform, converts any size or type of truck for aerial work up to 37 ft.

The platform raises 500 lbs. to full height in less than two minutes, and is useful in maintenance of outdoor lighting, power and communication

lines, and other overhead maintenance activities. It is available with electric motor, gasoline engine, or power take-off. The platform can be raised or lowered by foot controls on the platform floor or by hand controls mounted on the truck body.



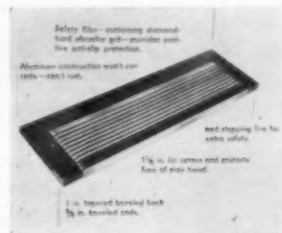
Twelve different sizes and styles are available and the platforms are equipped with a collapsible aluminum guard railing which can be folded when the platform is down.

G. W. Galloway Co., 25 N. Fourth St., Arcadia, Calif. (Item 31)

Visual Safety Stair Treads

Visual safety is now available in stair treads. The double red line at the safety tread edge outlines the limits of the step.

The tread comes in a standard 9-in. width with anti-slip abrasive grip filler locked in "V" shaped grooves. The safety treads are furnished with beveled ends in lengths as required for installation. The treads are easily applied over any type of stair using screws or combination screws and lead expansion seals.



The treads may be used on all types of stairs—wood, concrete, marble, slate, terrazzo, steel—interior or exterior.

Wooster Products, Inc., Wooster, Ohio. (Item 32)

Combination Floor Machine

The specifications for this Model 215G-2 combination Scrubber-Vac, (except for the brush spread), are the same as the large size Model 218G.

Model 215G-2 has two 15-in. brushes, and Model 218G has two 18-in. brushes.

The gasoline-powered combination Scrubber-Vac applies the cleanser,

scrubs, and picks up (damp-dries the floor) in one operation. There are no switches to set for fast or slow—a slight pressure of the hand on the clutch lever adjusts the speed to the desired rate.



One engine operates all working parts, and the unit performs quietly. Finnell System, Inc., Dept. NSN, 2200 East St., Elkhart, Ind. (Item 33)

News Items

The Cambridge Wire Cloth Co., Cambridge, Md., has announced the appointment of the Green-Penny Co., Oakland, Calif., and Robert Abel Co., Inc. of Brookline, Mass., as new selective distributors for its line of Gripper Woven Wire Slings.

DeWalt, Inc. has appointed new district sales managers to the company's New York City, Connecticut and New England territories.

Vincent Marino will represent DeWalt in Maine, New Hampshire, Rhode Island and Eastern Massachusetts. He has been with DeWalt since 1954.



V. Marino



R. C. Stevens

Robert K. Stevens will handle the Connecticut territory vacated by Ross C. Stevens. Mr. Stevens has been with DeWalt since 1955.



R. K. Stevens

Ross C. Stevens, Connecticut district sales manager since 1953, will take over the New York City territory. He joined DeWalt in 1946.

Albi Mfg. Co., Inc. has announced Bernard J. Tyler, director of sales, as vice-president.

The company produces a line of Underwriters' Laboratory listed fire-retardant paints. The appointment of Mr. Tyler initiates an expansion program for the company's sales division.

Gro-Cord Rubber Co., Lima, Ohio, is again making deliveries of soles and heels after the settlement of a six-month-long labor dispute.



The illustration shows one of the first shipments to leave the plant.

The plant is resuming normal production rapidly. Initially, production has been concentrated on Neo-cord, Neo-cork, Gro-cork and King-B soles and heels.

The Charleston Rubber Co. has announced the availability of a 19 x 22 in. illustrated poster card which shows how to care for rubber protective gloves and sleeves used by linemen and others who handle hot wires.

The poster is devoted exclusively to text and illustrations of how to properly wear, and handle and store rubber protective gloves and sleeves, how to prevent damage, or find it when it occurs, so maximum use and protection can be assured.



Printed on heavy weight enamel card stock, the poster is suitable for display on bulletin boards, in locker rooms, and at advantageous points in electric utility and industrial plants and for use in safety forums.

For copies write to the company in Charleston, S. C.

The appointment of Dan W. Oram as international executive director of sales has been announced by the



D. W. Oram

Klemp Metal Grating Corp. of Chicago. He will be located at the home office in Chicago, and will also maintain offices at the New York branch and the Houston branch.

Klemp Metal Grating Corp. manufactures welded and riveted grating, Hexteel and Floorsteel steel surface armors, and various types of safety stair treads.



J. B. Ayer

engineers.

Mr. Ayer and Mr. Cutler will concentrate in field work, carrying on educational and promotional work in connection with protective and safety clothing.

Both men have had several years experience in jobber relations and jobber promotional work.



R. E. Cutler

The Morton Salt Co. has opened a new, multi-million dollar laboratory building in Woodstock, Ill. The expandable building is designed for research in salt and its usage. The laboratory contains 67 rooms on a 22 acre site.

TRADE PUBLICATIONS

These trade publications will keep you up-to-the-minute on new developments in safety equipment and health products. All catalogs are free, and will be sent without obligation. Just circle publication number on the Reader Service Postcard.



1. Group Washing Equipment:

Catalog No. 5601, 28 pages features company's line of group washing equipment and drinking fountains. Points advantages of group washing equipment, describes construction and design details, and illustrates typical installations. Bowl compositions of pre-cast marble, stone, stainless steel and vitreous enamel are described and specifications, photos, drawings and diagrams are included. Bradley Washfountain Co., 2237 W. Michigan St., Milwaukee 1, Wis.

2. Safety Solvents: Cleaning of motors and generators, and other equipment, quickly, efficiently and safely, with company's detergent action safety solvent is detailed and illustrated in Bulletin A-28. Describes uses in industry, and includes graphs showing evaporation cycles, optimum evaporation rate. Turco Products, Inc., 6135 S. Central, Los Angeles, Calif.

3. Sling Chain Handbook: Illustrated Data Book 100, 32 pages, presents "How to do it" information on sling chains—from ordering to care, use and inspection. Contains diagrams, charts and tables on standard and special styles of sling chains and attachments, and their sizes, weights, and working load limits under many conditions. Columbus McKinnon Chain Corp., Tonawanda, N. Y.

4. Non-Slip Flooring: Algrip, an abrasive rolled steel floor plate described as non-slip even on steep inclines, is the subject of Booklet AL-26, 8 pages. Discusses safety features; gives fabricating data. Alan Wood Steel Co., Conshohocken, Pa.

5. Dust Filter: Design, application and benefits of company's AC dust filter are described and illustrated 26-page Bulletin 559. Filter per-

formance curves, principle of air filtration, filter comparison charts, woven VS felted filter media are featured, along with technical data on design, capacity ratings, dimensions, velocity, air volume and type friction tables. Installation photos and drawings of typical equipment layout are included. The Day Co., 810 Third Ave., Minneapolis, Minn.

6. Signal Equipment: Types on how to select suitable signals for any specific operation are offered in one of a series of bulletins No. 100-125 bond in this 40-page catalog. Other bulletins describes horns, bells, warning lights, other signal equipment. Specifications, photos, wiring diagrams, dimensions, audibility rating charts, electrical characteristics and other data included. Federal Sign & Signal Corp., 8725 S. State St., Chicago 19, Ill.

7. Insect Control: Featuring manufacturer's insecticides and insect control equipment, this practical 36-page booklet provides excellent tips on the control of industrial insects. More than 60 pests are pictured along with specific information on where they are found, identifying features, extent of damage, life stages and cycles, characteristics of existence and recommended control measures. Ten insecticides are discussed in detail. Atomizers, mistorizers and fogging units are pictured and described as to the advantages and applications. West Disinfecting Co., 42-16 West St., Long Island City 1, N. Y.

8. Wire Rope Assembly: Catalog 5201, 22 pages, describes company's wire rope assemblies, use for operating controls, as a part of machinery and equipment, or for slings and hoists. Gives general applications for various types of wire rope assemblies, and includes specifications, ordering details. Macwhyte Co.,

2902-14 Ave., Kenosha, Wis.

9. First Aid Kits: Wide variety of first aid kits for general and specific uses covered in this bulletin. Diagrams show to use various medications and bandages. Pac-Kit Co., 175 Greenwich Ave., Greenwich, Conn.

10. Fire Hose Reels: 16-page catalog H-115-F describes hose reels for fire fighting equipment, with illustrations of various models and cutaway view showing component features. Specifications, as well as descriptions of operational advantages are included. Clifford B. Han-nay & Son, Inc., 825 Main St., West-terlo, N. Y.

11. Neoprene Design Book: This illustrated bulletin discusses the properties of Neoprene, showing how they are utilized in products made from this chemical rubber. Covers its toughness, hardness range, air retention, performance under loads, at extreme temperatures, flame and chemical resistance. Elastomers Div., E. I. DuPont de Nemours & Co., Wilmington, Dela.

12. Battery Manual: Battery selection technics are emphasized in 20-page Bulletin 210, a revised edition of this manufacturer's manual on storage batteries for stand-by power, emergency lighting and switch-gear applications. A discussion of charging equipment and simplified battery maintenance procedures is included. Storage battery installations procedures are described and illustrated by photos. Exide Industrial Div., Electric Storage Battery Co., P. O. Box 8109, Philadelphia 1, Pa.

13. Enclosed Switches: Catalog 83, 28 pages, describes in detail enclosed switches for industrial applications. Included are general switches designed for use on either A-C or D-C

purpose switches, sealed switches, heavy-duty limit switches, hand operated switches, and maintained-contact switches, all of which are available in a variety of actuator designs, contact arrangements and electrical ratings. Photos, dimensional drawings, circuit diagrams, electrical data are included. Micro Switch, Div. Minneapolis-Honeywell Regulator Co., Freeport, Ill.

14. Metal Grating Handbook: 16-page Form 500 is data and specification manual covering all types of grating, open steel floor armor, stair treads, vessel liners, decking and drinking grates. Contains safe load tables for basic types of grating, panel width constant charts, tables on standard width and types of steel treads, types of anchors used for grating. Klemp Metal Grating Corp., 6601 S. Melvina Ave., Chicago 38, Ill.

15. Sling Handbook: This 64-page Tuffy-Sling handbook is replete with illustrations, charts and diagrams describing 16 factory fitted slings and nearly 2 dozen standard fittings available for slings, including several which are recent additions to the line. Book contains a complete rigger's manual, shop chart arrangements, and engineer's notebook and standard signals for directing operations of overhead traveling cranes and derricks and locomotives. A new development featured is the steel ferrule splice now on all Tuffy Slings, which afford safety and other advantages. Union Wire Rope Corp., 21st & Manchester Ave., Kansas City 26, Mo.

16. Wire Rope Fitting: Catalog No. 950-1, 28 pages, shows a complete line of fittings for wire rope and chains. Profusely illustrated with product pictures, catalog includes engineering data and charts, also dimensions and safety factors for links, rings, shackles, swivels, hoofs, turnbuckles, clips, sockets, ringbolts, others. The Thomas Laughlin Div., American Hoist & Derrick Co., St. Paul 1, Minn.

17. Power Sweepers: Four-page folder describes Wayne Power Sweepers, Model 605 and 606, giving full specifications for each. The newly designed sweepers are capable of sweeping up to 100,000 or more square feet per hour in open areas and feature a "Filter-Vac" dust control which eliminates the usual dust bag. Wayne Manufacturing Co., 1201 E. Lexington Ave., Pomona, Calif.

18. Protective Maintenance and Service Items: Twelve-page catalog

fully illustrates company's line of all-purpose work clothing and protective aprons, sleeves, leggings, caps, head bands and gloves. Also, made-to-order items such as canvas and plastic bags, machinery and business machine covers, drop cloths, tarps, fire blankets, welder's curtains and hand pads. Associated Bag and Apron Co., 2650 Belden Ave., Chicago 47, Ill.

19. Floor Maintenance Machines: Eight-page catalog describes and illustrates company's line of rotary-type machines. A brief portion of the catalog is devoted to the evolution of this all-new line of machines, line drawings help to spell out product features based on user research and a series of top notch action photos shows the machine doing various jobs. Other sections of the catalog include buying facts on how one machine does ten jobs. Fourteen points to check before you buy a floor maintenance machine. How to select a machine to fit the job—and the budget! A final section deals with performance-proved, easy-on, easy-off attachments, a small all-purpose utility floor polisher-scrubber and one of a line of commercial type vacuums for wet or dry pick-up. The American Floor Surfacing Machine Co., Toledo 3, Ohio.

20. Gripper Sling Catalog: Catalog describes and illustrates company's complete line of Gripper Woven Wire Slings. Contains typical application photographs and gives complete price and specification information. In addition, a completely new section is included in this edition. This covers Gripper Slings covered with Neoprene or Plastic for use in handling high finished materials such as polished bar stock. The Cambridge Wire Cloth Co., Cambridge, Md.

21. Portable Emergency Lighting: Bulletin fully illustrates and describes a new automatic emergency lighting unit Model E, that is UL approved. Furnishes light automatically when regular power fails. General Scientific Equipment Co., 27th and Huntingdon St., Philadelphia 32, Pa.

22. Information Service: Bulletin describes a fire and accident control Information Service that contains an Index and Directory of fire and accident control "standards," and references. The Index and Directory was developed to provide a fast and reliable means of locating information desired on accident prevention, fire control and health and sanitation contained in nationally recog-

nized codes and standards and reliable references. May be used in fire and accident control administration, management, supervision, planning and programming, design and engineering, education and training, examining and testing, inspecting and investigating, lecturing, research, library development, etc. Loss Control Associates, 529 Oakmont Drive, Plattsmouth, Neb.

23. Noise Reduction of an Acoustical Stock Tube for Screw Machines: Two reports (No. 1 and No. 2) of tests conducted by the Armour Research Foundation of Chicago to determine the effectiveness of Corlett-Turner Silent Stock Tubes in eliminating the noise of revolving bar stock and screw machines is available. The increasing interest and concern of both management and production men have shown toward the problem of noise elimination or control makes the two reports of timely interest. Corlett-Turner Co., 1001 S. Kostner Ave., Chicago 24, Ill.

24. Press Style Marking Dies: This book completely describes marking with steel dies. It contains a section dealing with basic information on the use and selection of steel dies for every application; a section on steel stamping, embossing and foil leaf marking dies; a section on press-style type holders, tool post holders for marking around the peripheries of cylindrical or round-tapered parts; and numbering heads for embossing or debossing. Jas. H. Matthews & Co., 3942 Forbes St., Pittsburgh 13, Pa.

25. Engineered Special Hazard Fire Protection: This new highly illustrative catalog 73, fully describes the various generally accepted methods of fire detection, fire prevention, fire control and fire extinguishment associated with the field of special hazard fire protection for business and industry. Also included is a fire control and extinguishment chart that explains the major applications of fire control medium, occupancies for fire hazards involving flammable liquids and fire hazards involving fast-burning or explosive solids. Automatic Sprinkler Corporation of America, Youngstown 1, Ohio.

26. Welding With Ampco Bronze Electrodes-Filler Rod-Wire: Bulletin W-17 describes up-to-date technical information and data relative to arc welding with bronze electrodes, filler rods and wire products. Specific sections describe the new Phos-Trode C, Mang-Trode and Ampco-Trode 46 electrodes, welding

techniques, welding processes, recommended welding currents, welding procedures, weldability chart, etc. Ampco Metal Inc., 1745 S. 38th St., Milwaukee 46, Wis.

27. Accident Prevention Signs: This folder describes and illustrates the use of self-sticking accident prevention signs. Featured are "basic purpose" signs, ASA signs, danger, caution, informational, direction, safety instruction and radiation hazard. Also featured are "Specific Purpose" signs. Shows how they are applied and gives wide choice of colors. W. H. Brady Co., 727 W. Glen-dale Ave., Milwaukee 12, Wis.

28. Lunchroom Equipment: This bulletin describes and illustrates various types of cafeteria, restaurant and lunchroom equipment. Includes sectional tables suitable for industrial eating facilities as well as production work. Chicago Hardware Foundry Co., North Chicago, Ill.

29. Ear Plugs: This four-page bulletin describes several types of noise selective ear plugs to protect hearing in noisy industrial operations. Some permit comprehension of ordinary speech but screen out harmful noise, while others are said to eliminate all sounds. United Cable Corporation, 85 Beechwood Ave., New Rochelle, N. Y.

30. Portable Dust Collector: A highly versatile dust and dirt collecting unit that attaches to an ordinary waste can is shown in this well illustrated four-page folder. The portable vacuum unit can be used to collect dust directly from machines, to clean floors and walls. Standard hooks, nozzles and fittings adapt it to any machine. Craft Tools Inc., 401 Broadway, New York, N. Y.

31. "How to Get the Most From an Employee Award Program": This twenty-eight page booklet tells you how you can cut lost-time accidents, and how to publicize and popularize safety achievement in your company, by helping you plan and carry out an effective program of incentives and recognition for your employees. Hamilton Watch Co., Lancaster, Pa.

32. Safety Signs: Colorful folder describes company's line of safety and special purpose plain or reflectorized signs for every need. Sargent & Sowell Inc., P. O. Box 1176, Grand Prairie, Texas.

33. "Color Dynamics in Industry": Booklet explains a new painting system, in which every color on walls, floors, ceilings, machines and mobile equipment performs definite duties; lessens eye-fatigue, builds morale

and use of safety colors to warn of danger areas. Pittsburgh Plate Glass Co., Paint Division, Department NSN-36, Pittsburgh 22, Pa.

34. Linemen's Safety Equipment Catalog: Catalog describes and illustrates a complete line of safety equipment that includes belts, safety straps, climbers, tool holsters, hand tools, tool buckets and gloves for linemen. W. M. Bashlin Co., Grove City 3, Pa.

35. Electro-Lock Shield: Bulletin describes a shield that permits the operator to see clearly the work he is performing and at the same time protects his face from sparks, flying chips and emery dust. The machine cannot be started when the shield is out of protective position. Junkin Safety Appliance Co., 101 S. Floyd St., Louisville 2, Ky.

36. Scaffolding: Bulletin G-205 illustrates a variety of types of sectional steel scaffolds, sidewalk bridges, swinging scaffolds, scaffolding machines and safety ladders and accessories. The Patent Scaffolding Co., Inc., 38-21 12th St., Long Island City 1, N. Y.

37. Safety Drill Tables: Folder on a safety drill table to prevent accidents, broken drills and scrap. It combines a drill table, a vise, a set of parallels and a V-block in a single unit that replaces the round table on any drill press. Modern Machine Tool Co., 2005 Losey Ave., Jackson, Mich.

38. Ladder Catalog: A brochure illustrating ladders and accessories for use in stores, offices and factories. Rolling ladders, wheel and brakes are featured. I. D. Cotterman, 4535 N. Ravenswood Ave., Chicago 40, Ill.

39. For Slipproof Floors: Pamphlet tells of advantages of materials designed to prevent slipping accidents on slick oil covered floors. Non-flammable product eliminates accident hazards and improves appearance of unsightly and dangerous looking greasy floors. Canfield Oil Co., Cleveland 27, Ohio.

40. High-Vacuum Hand Pump: Brochure on high-vacuum hand pump designed to speed up the transfer of oils and other commercial liquids, and add to the safety and economy of handling operations. Low cost unit eliminates dripping and slippery floors. Tokheim Corp., 1670 Wabash Ave., Fort Wayne 1, Ind.

41. Grinding Wheel Guard: Brochure describes various type guards for shaft equipment, angle grinders,

sanders, polishers and other wheel grinders. The guards feature protection with adequate wheel exposure. Morrison Products Inc., 16816 Waterloo Road, Cleveland 10, Ohio.

42. Vacuum Sheet Lifters: Catalog describes vacuum sheet lifters that lift, roll-over and transport sheet steel, aluminum, ingots, glass, plywood boxes, cabinets—regardless of weight by air. F. J. Littell Machine Co., 4165 Ravenswood Ave., Chicago 40, Ill.

43. Lens Cleaning Station: A folder on a lens cleaning dispenser cabinet that is neat, compact, containing lens cleaner, tissue and space for used tissue. Easy to install, use and service, it is made of all-welded steel construction, in white or green baked enamel finish. The Wilkins Co., Cortland 1, N. Y.

44. Abrasive Paint: Three main features of non-slip abrasive paint—application, adaptability and economy—are described in a bulletin, for controlling dangerous slipping problems in plants and buildings. Frost Paint and Oil Corp., 1209 N. E. Tyler, Minneapolis 13, Minn.

45. "Anti-Septic Soaps for Industrial Use": Booklet based on studies of industrial dermatitis, discusses the different causes of this ailment and presents a preventive program employing the use of industrial soaps. Armour & Co., 1355 W. 31st St., Chicago 9, Ill.

46. Plant Protection: Literature describes how to establish a plant protective system with company's line of watch clocks and patrol recorder equipment. Detex Watch Clock Corp., 76 Varick St., New York 13, N. Y.

47. Abrasive Surface Castings: Folder on non-slip surfaces cast in Feralun, Alumalun, Bronzalun, Nicalun and available in hatched, plain or fluted designs. Specifications and typical installation layouts given. American Abrasive Metals Co., 460 Coit St., Irvington 11, N. J.

48. Lighting: Manual gives general engineering information in principles and economies of lighting indoors and outdoors to a listing of specific industrial areas. Application, diagrams, and installation photographs are included. Holophane Co., Inc., 341 Madison Ave., New York 17, N. Y.

49. Safe-T Shoe: Information on a complete line of safety shoes with dress-shoe styling. Hidden steel-flanged toe-protector gives protection against toe injury. Dorsey Safe-T Shoe Co., Chattanooga, Tenn.

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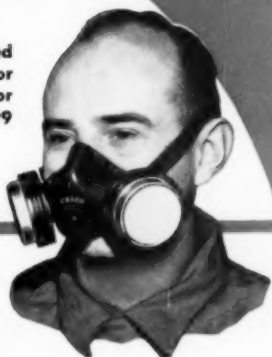
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